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August 21, 1950

STEEL

The Magazine of Metalworking and Metalproducing

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A FINER BRASS PRE-COAT

...on cold rolled strip steel...

in any width

from

1/4 inch to 20 inches

ALL TEMPERS

NATURAL, PLANISHED AND BUFFED FINISHES

...also electrocoated with Zinc, Copper, Nickel and Chromium • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Annealed Spring Steel • Alloy Strip Steel • Uncoated Strip Steel • All Produced to Your Specifications.

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WARREN, OHIO
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Bulletin 300-75 describes this unit completely. Write for your copy.

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HOISTS

JIB CRANES

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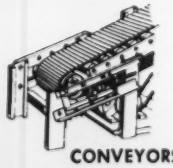

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Also: Foundry Equipment • Railroad Equipment • Metal-Working Machinery • Swenson Evaporators and Spray Dryers

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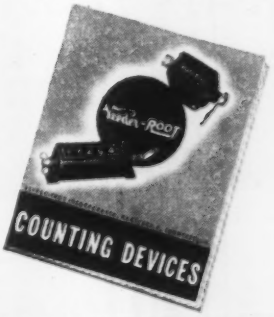
WHEN IT "PANS OUT" that a product can be taught to count to the greater benefit of its users . . . then, by the same token, it will count to the greater profit of its maker.

Witness the case of the manufacturer of electrical equipment who . . . in a hotly competitive market . . . built a Veeder-Root Counter into his product to record the number of times that product was push-buttoned into service by its users. *And so he proved his service guarantee beyond argument or doubt* . . . while his competitors were still hurling words instead of Facts-in-Figures.

Now . . . what about looking for new pay-dirt in *your* product?

Small Reset Counter, built into many products to count strokes or turns. For picture of complete line of mechanical and electrical counters, write for *free* 8-page "Count Book" below.



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Describe your corrosion problem on your letterhead, and let us show how Hysol Coatings can save money for you.

houghton laboratories, inc.
OLEAN, NEW YORK

Behind the Scenes . . .

No Flying Carpets

We regret to report that Willys-Overland Motors Inc. has just shattered one of our childhood illusions.

Willys hints that flying carpets are outdated as a means of locomotion in Bagdad. Jeeps are coming in. The company says that the director general of Bagdad's police has ordered 121 of the vehicles for the local constabulary's use.

Tricks of the Trade

Advertising Highlights has a columnist, the Ad Watcher, who comments on effective advertising usages. In his July column he cited three companies advertising in STEEL.

The Ad Watcher likes Lamson & Sessions Co.'s well planned layouts that make maximum use of the page in telling about industrial fasteners. The next Lamson & Sessions ad appears Sept. 4.

He likes the full-color, full-picture stories presented by United Engineering & Foundry Co. In this issue on page 49, United shows a brass mill which it has built.

The Ad Watcher also found ingenious the Gisholt Machine Co.'s device of snipping off the upper right hand corner of the first page of its four-page, two color insert. In this issue Gisholt tells what its machine tools can do on pages 9-12.

Address Unknown

STEEL has lost a subscription! No. 132 in the U. S. Penitentiary at Alcatraz had been a faithful subscriber since June, 1947. He (we assume the sex) failed to renew when his subscription expired. Our form letter seeking his continued readership came back last week marked, "Left no forwarding address."

How It's Done

The fourth in STEEL's series on depreciation and re-equipment reform begins to the east of here.

Do you know when to re-equip? Do you know how to set up a re-equipment program? Let STEEL take you to three prominent machinery manufacturers to see how they tackle the problem.

Earlier stories on depreciation and re-equipment appeared May 8, June 19 and July 31. Reprints of the July 31 and this issue's articles are available. Write us for them.

Log Jam

Piled on our desk are 18 copies of six different weekly magazines. A gentleman ahead of us on the routing slip just returned from a three weeks' vacation.

When we go on our vacation we have resolved not to hold up anybody's reading matter. We're last on the list.

Puzzle Corner

It takes 14 operations to divide the milk up equally in the Aug. 7 problem. This table shows one way to do it:

Operation	5-qt. A	9-qt. B	14-qt. C
1. 5 into A	5		9
2. 5 into B		5	9
3. 5 more into A	5	5	4
4. 4 from A to B	1	9	4
5. 9 from B to C	1		13
6. 1 from A to B		1	13
7. 5 from C to A	5	1	8
8. 5 from A to B		6	8
9. 5 from C to A	5	6	3
10. 3 from A to B	2	9	3
11. 9 from B to C	2		12
12. 2 from A to B		2	12
13. 5 from C to A	5	2	7
14. 5 from A to B		7	7

First in with correct answers to the milk problem were C. E. Blass of Talon Inc., T. S. Bean of Barber & Ross Co., M. S. Bailey of Machine Products Corp. and O. L. Foster of Blood Bros. Division of Standard Steel Spring Co.

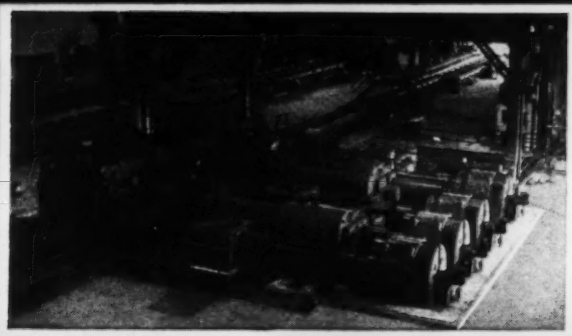
A cylindrical glass is 4 inches high and 6 inches in circumference. On the inside of the glass, 1 inch from the top, is a drop of honey. On the opposite side of the glass, 1 inch from the bottom on the outside, is a fly. How far must the fly walk to reach the honey?

Skrdla

(Editorial Index—page 51)

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countires, one year $18. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

Continuous billet rolling is begun in this 6 stand, close-coupled mill. Power at 13,800 volts is converted in the 5 machine, 8000 kw synchronous M-G set seen here. Six d-c motors of 1750 hp each, *Regulex* controlled, drive the mill.



An Allis-Chalmers 4000 kw, 3 machine synchronous M-G set (shown preceding photo) converts the power to drive the four stand continuous billet mill. Speed of the four 1250 hp motors is regulated by *Regulex* variable voltage control.

G M G

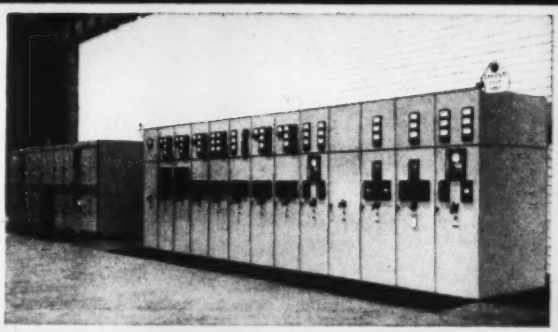
SEE THE A-C EXHIBIT AT THE AISE CONVENTION

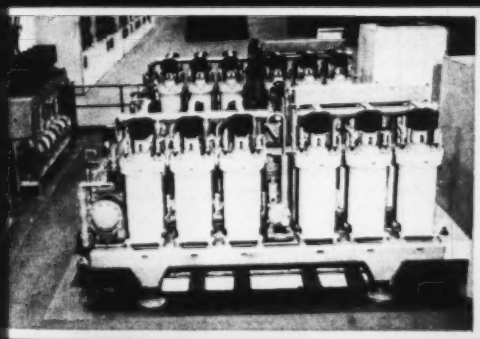
CUTAWAY & WORKING MODELS

- Tube-Cooled and General Purpose Motors
- Liquid Rheostat
- Air Break Contactor
- CW Solids Pump
- D-C Positioning Device

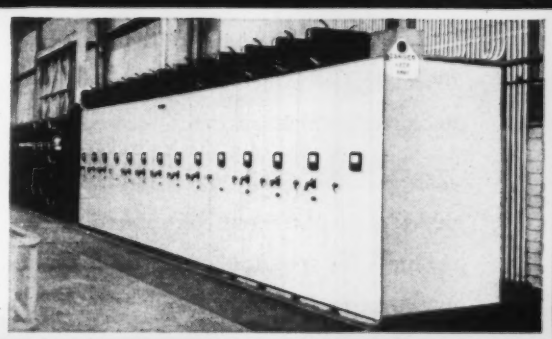
BOOTHS 35, 36, 37
EXHIBIT HALL
CLEVELAND PUBLIC AUDITORIUM

General purpose a-c power is supplied through four Allis-Chalmers transformers totalling 10,000 kva (shown schematically). These are connected to 2300 volt metal clad (right front) and 480 volt metal enclosed (left) switchgear.





Direct current at 250 volts is distributed to mill supply through this Allis-Chalmers switchgear. Feeder breakers protecting d-c system and cathode breakers located here. Purchased and byproduct power systems meet in d-c mill supply bus.



Power in Lorain Mill

sets (also A-C but not shown) enables each of the continuous billet mills to operate close-coupled.

The National Tube company has bought a wide range of associated apparatus from Allis-Chalmers and has gained undivided responsibility for the operation of this equipment. National Tube already knew from experience that A-C equipment is reliable; 12 Allis-Chalmers motors in No. 1, 2 and 3 Seamless mills, ranging from 600 to 3500 hp, are now approaching a quarter century of service.

A qualified steel mill representative will give personal attention to the electrical requirements of *your* plant modernization or expansion. A-C builds a complete range of generation, switching, conversion, rectification, drive, and control equipment. Offices in all major cities.

ALLIS-CHALMERS, 1021A SO. 70 ST.
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A-C CHALMERS

Processing Equipment for Iron and Steel

A-3131

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AND—*Name Your Hazard!*

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Automatic FIRE-FOG, a leader among modern fire protection systems, provides instantaneous control and extinguishment of even the toughest fires. It's specifically designed for your particular risk—scientifically engineered so as to assure maximum protection for every area vulnerable to fire.

Fully approved by all leading insurance authorities, *Automatic* FIRE-FOG may be just the protection you've been seeking for the hot-spot area that is constantly threatening the continuity of your plant operations.

Get in touch with your nearest *Automatic Sprinkler* fire protection engineer for details on FIRE-FOG or other types of fire extinguishing systems. Name your hazard—we'll protect it!

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler
FIRST IN FIRE PROTECTION
DEVELOPMENT . ENGINEERING MANUFACTURE . INSTALLATION
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

LETTERS
TO THE EDITORS

Detects Flaws

In your July 24 issue of STEEL, page 68, you refer to a new inspection method for detecting metal surface flaws. We would like to know where we can obtain more information and samples of this material.

J. A. Biggers, Engineer
Ed Friedrich Inc., San Antonio, Texas

• *Get further information from the inventor, Northrop Aircraft Inc., Northrop Field, Hawthorne, Calif.*

Maybe Yes—Maybe No

What is so highly unconventional about the McLouth blooming mill? (STEEL, July 17, page 62). More than 45 years ago Clairton had a blooming mill which operated at speeds up to 200 rpm. With 3 foot active roll diameter, this amounts to almost 2000 fpm. In 1903 I designed twin tandem compound reversing engines, supposed to be slow reversers, for two mills of Illinois Steel Co. They went from 120 rpm in one direction to 120 rpm in the opposite direction in 1.6 seconds. What is so remarkable about the McLouth mill reversing in 1.7 seconds? For many years Jones & Laughlin (Soho Works) rolled heavy ingot slabs into ¼-inch boiler plate and even coiled the strip plate.

What you should have said is this: Electric motors are flywheels and for that reason, cannot reverse quickly. It is remarkable that an electrically operated mill can be reversed in 1.7 seconds. And since our statement does not include the rpm in either direction, it is perfectly meaningless.

W. Trinks
Ohiopyle, Pa.

• *Mr. Trinks has keen recollections of the early days of the steel industry, and if he feels the McLouth blooming mill is not unconventional, he is well entitled to that opinion. However, many veteran mill operating men, after witnessing the McLouth operation, have felt differently.*

The Past Is Present

The article on page 84 of the July 19 issue covering the annealing of forgings at Ford was very interesting. We assume that you are familiar with our publication, "Annealing of Steel", by Peter Payson, published in 1943, in which, on page 60, the author suggested use of the annealing method adopted by Ford.

D. W. Kaufmann, Metallurgist
Crucible Steel Co. of America, Pittsburgh, Pa.

Platers' Aid

We would appreciate further information on the "New Aid for Platers" as announced in your July 3 issue, page 81, as being manufactured by Chemclean Products Corp., New York.

O. V. Woolley, Secretary & Treasurer
Maid-O'-Mist Inc., Chicago, Ill.

• *Write Chemclean Products Corp., 64 Sixth Ave., New York 13, N. Y., for additional information.*

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STEEL

The Magazine of Metalworking and Metalproducing

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Next Week ... **Cold Reduced Steel Gains Favor as Magnetic Core Material ... Metal Spraying Pays Off as "Finishing Tool" ... Oxygen Technique Salvages Stainless Steel Scrap**

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Minimize shut downs, repairs and replacements by utilizing the experience of alloy casting producers in selecting the correct alloy type to meet your specific needs.

Nickel-chromium-iron heat resistant castings . . . made in conformity with the Alloy Casting Institute designations with specified nickel contents ranging up to 68% and chromium up to 32% . . . are readily available. Those most widely used may be broadly classified as follows:

GROUP I—Very High Nickel—Low Chromium—Highly resistant to oxidation, carburization, nitriding, thermal shock and creep . . . this group of castings with very high nickel content provides extra stamina in vital heat treating and furnace applications.

GROUP II—High Nickel—Low Chromium—This group embraces the main furnace alloys. These high nickel—low chromium alloys are used extensively for salt and lead pots, furnace muffles and in highly stressed parts such as chains, link belts and other moving parts.

GROUP III—Low Nickel—High Chromium—Large tonnages of low nickel—high chromium alloys are used in the heat treating and furnace field. These castings are lower in cost than those of the first two groups. They provide somewhat less resistance to carburization and nitriding than do the higher nickel types.

GROUP IV—Very Low Nickel—High Chromium—Very low nickel—high chromium irons find their chief applications in high sulfur atmospheres and for elevated temperature service when high creep strength is not an important factor.

Our casting specialists will be glad to consult with you and suggest where nickel-chromium-iron alloys may be useful to you. Write us today.

INCO

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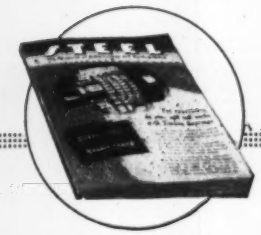


August 21, 1950

Mobilizing "Know How"

In view of the confusion prevalent in Washington, it is refreshing to consider one detail of rearmament which seems to be getting off to a good start. We refer to the contract entrusted to the Cadillac division of General Motors Corp. to produce a new and highly regarded tank in the World War II bomber plant at Cleveland airport.

When the Korean invasion jolted Washington officialdom out of its complacency, one of the first thoughts of the military was the problem of gaining early equality or supremacy in tanks. The bomber plant, used by Fisher Body during World War II to assemble B-29s, seemed to be an ideal place to build tanks. The spacious building has been used by a government agency to store government-owned surplus beans. Last week, even before all of the 300 carloads of beans had been removed, key executives of Cadillac flew to Cleveland to tackle the tremendous job of getting the plant into production at the earliest possible moment.

The skeleton crew assigned to the job by Cadillac is composed of top notchers. Edward N. Cole, works manager; R. J. Ackerman, general superintendent; H. F. Barr, chief engineer; P. S. Philo, manager of purchases; J. H. Lamb, tank operations manager; and W. S. Chisholm, personnel director, are Cadillac veterans with more than 20 years' experience. Some of them earned envious records for tank production in World War II.

These executives will recruit about 6000 workers for the plant. Already they have alerted about 1000 metalworking plants to be ready for subcontracts. The speed with which the management team has been organized and the high caliber of its personnel will inspire confidence everywhere. Here is first class "know-how" mobilized in a hurry. One has every right to expect that new records of achievement will be established at the Cadillac tank plant.

This expectation is based on the reputation of GM to get things done. GM is a big corporation—one of the biggest—and in the new deal and fair deal book bigness is sinful. The American people are fortunate that they have strong, resourceful large corporations. Their contributions in the present emergency will refute convincingly the arguments of demagogic fair dealers that "big business" is detrimental to the general welfare of the people.

* * *

BEWARE OF SABOTAGE: If the present emergency gets really tough, the problem of plant protection will be much more complicated and difficult than it was in World War II. When Hitler turned against Russia, all communistic plans for sabotaging the American war effort were blown sky-high. Soviet agents actually helped us arm the Allies.

Today, if worst comes to worst, these subversives will stop at nothing to wreck our industrial machine. Therefore, it behooves every plant to begin now to plan for effective protection. A defense official tells us there are eight steps which industrial executives can take to protect their properties against sabotage:

1. Restrict admission of visitors and carefully observe visitors admitted.
2. Reinstitute employee pass systems.
3. Screen carefully every applicant when hiring new personnel.
4. Scrutinize carefully every suspected subversive now on the plant payroll.
5. Expand the present plant guard organization or create one if none is operative now. Pro-

(OVER)

vide for adequate training and officering of guards.

6. Promote employee loyalty programs and encourage all employees to accept a measure of responsibility for plant security.

7. Report sabotage threats or attempts to FBI. Do not report sabotage attempts to newspapers or to the public.

8. Encourage the formation of civil defense organizations in your community.

Consider these suggestions calmly and intelligently and then prepare to put into effect those which seem applicable to your situation. —p. 60

* * *

ODD DEAL IN NICKEL: Since the Korean invasion, users of nickel have been receiving only 65 per cent of their average consumption over the first four months of the year. Principal reason for the cut is the necessity of stepping up stockpiling of nickel quickly.

Scarcity of the metal has led to some odd transactions. A Formosan broker, learning of the scarcity in the United States and knowing that Chiang Kai-shek had large stores of nickel coins, offered to pay the generalissimo one American dollar per pound for 10,000 pounds of coins. Chiang accepted the offer, whereupon the broker sold the coins to a West Coast broker for $1.20 a pound. He in turn sold them to General Motors for $1.45 a pound. GM melted them down into anode bars.

The price of nickel anodes from regular sources is 63 cents a pound. GM paid more than double the normal price, but it increased its supply of nickel. Such is the ingenuity called for by today's unusual conditions. —p. 73

* * *

WELCOME WINDFALL: Associate Editor Dan Reebel has returned from an inspection of iron ore properties in the Steep Rock section of Ontario. What he reports is encouraging from the standpoint of an immediately available supplementary source of high grade ore.

Geologists have known since 1897 that iron ore was present in the area, but not until 1938-1941 did extensive drillings indicate the existence of three definite ore bodies. Until recently it was supposed that Steep Rock contained several hundred million tons of ore. Within the past year, new development work has indicated that a billion tons may be nearer the mark.

The ore is high quality hematite with natural iron content ranging from 50 to almost 60 per cent. It is only 140 miles, over an adequate rail line, to existing docks at Port Arthur. Last year 1,134,261 tons were shipped. This could be stepped up to 10 million tons annually in the not too distant future. Steep Rock is a welcome windfall. —p. 88

* * *

WE'RE ON THE MARCH: Steel ingot production in July topped 8 million tons, a new record for the month. Output for the first seven months exceeded 55 million tons, also a new record.

American Iron & Steel Institute calculates that at the July rate, the steel industry is producing enough steel every 24 hours to provide for the construction of an aircraft carrier, 500 airplanes, 1000 antiaircraft guns, 500 tanks, 500,000 3-inch shells, 1000 howitzers, 2000 aerial bombs, 2 heavy cruisers, 1000 freight cars, 2000 trucks, 2 cargo ships, 2 tankers, 12,000 autos, 2000 homes, 20,000 household refrigerators and 20,000 stoves—and 20,000 tons of steel would be left for other purposes.

But this isn't all. This week's issue carries an impressive list of newly announced programs for expanding steel capacity. —pp. 61, 62

* * *

STRAIN ON MANPOWER: As this nation's rearmament program gets underway, increasing dependence for its success will rest upon the performance of two comparatively small but highly important industries—machine tool builders and contract tool and die shops. Both seem to be well fortified as to physical capacity for whatever is demanded. Their bottleneck, if any, will be caused by a shortage of skilled labor.

About 250 machine tool builders are in business today. They employ 36,000 persons compared with 112,200 at the peak of World War II. About 2500 contract tool and die shops now operating employ 45,000. Comparable figures for the war peak are 4000 shops and 65,000 employees.

When the pressure mounts, the problem will not be one of increased capacity as much as it will be increased manpower in the skilled categories. Pending the period of intensive training of new personnel, it may be necessary to extend the working hours of present employees —p. 60

E. C. Shaner

EDITOR-IN-CHIEF

News Summary

SHAPING UP—Industrial mobilization is still going at a snail's pace, but at least the snail is moving (p. 59). Military ordering is increasing a little, and the metalworking products required are more diversified than five weeks ago. Subcontracting is rising, particularly in the aircraft industry. Subcontractors can expect more business, too, when the tank program gets in progress. Cadillac has leased a Cleveland bomber plant (p. 59) to build tanks and will eventually order from 600 suppliers. Pilot orders for other track-laying military vehicles have been let.

SIGN OF THE TIMES—Another indication that industrial mobilization is getting underway is the increasing concern about manpower. Machine tool builders and operators of contract tool and die shops both have enough plant capacity for a big defense program, but skilled manpower is a different matter (p. 60). Machine tool builders now employ about 36,000, compared with 112,200 in 1942 at the peak of their war effort. Tool and die employers have about 45,000 wage earners, compared with 65,000 at the peak of their war production. Auto makers are more worried about shortages in labor than in material (p. 73).

SHADES OF WORLD WAR II—If you're a defense contractor or subcontractor, follow closely the course of H. R. 9246 now being considered in the House (p. 61). It's a measure to provide for government contract renegotiation and would reinstitute the World War II setup almost intact. Industry spokesmen testifying on the bill charge that renegotiation is not needed now on the scale of World War II. They point out that renegotiation leads to industrial inefficiency and careless military procurement.

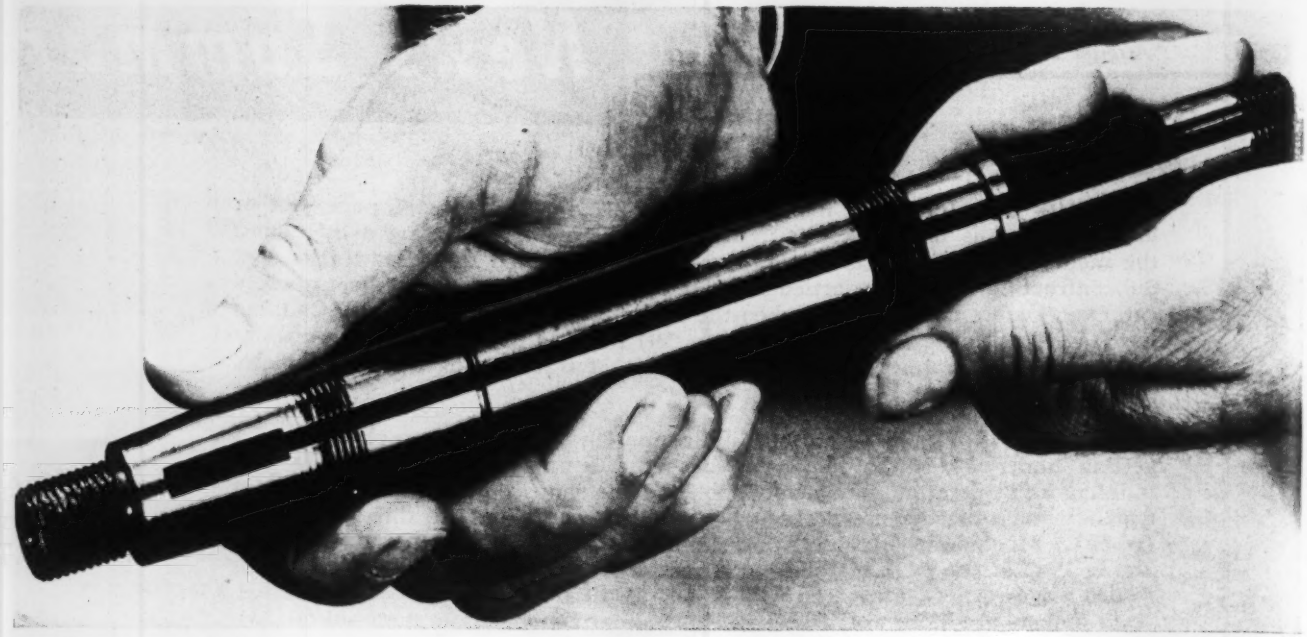
HOW TO PREVENT SABOTAGE—Your plant may be becoming increasingly subject to Communist sabotage (p. 63). To guard against the danger the Defense Department says: Control admission of visitors more carefully; reinstitute employee pass systems; screen new personnel carefully; create or expand a plant guard system.

NO GHOSTS—National Security Resources Board says its phantom order scheme is a live and permanent program (p. 66) not a flop. NSRB says the phantom orders are schedules of emergency production to enable industry to plan ahead and will save months of delay in setting up order pools. Contracts will be activated in case of a national emergency and after Congress makes funds available. About $750 million worth of machine tools, $75 million worth of cutting tools and $22 million worth of gages have been ordered on the phantom basis.

THE KOREAN SCORE—Chicago firms replying to a purchasing agent's survey attribute as a direct result of the Korean war the higher prices they must pay for material, the delivery delays from suppliers and their increased output (p. 78). Truck manufacturers may assemble an alltime high of 1.4 million vehicles this year, because of the war (p. 79).

BOOST YOUR BATTING AVERAGE—You can take a direct step to help reform the nation's depreciation and re-equipment policies and save money and keep in top place technologically besides (pp. 70-71). Machinery & Allied Products Institute and other groups recommend a scientific approach to equipment replacement instead of the by-guess-and-by-gosh method too commonly used now. Is the MAPI system a long-hair proposal? Who's tried it? Barber-Colman Co., Harris-Seybold Co. and Warner & Swasey Co. are among the firms using it. All like it, all say it's a step toward depreciation and re-equipment reform that you can make by yourself without having to rely on outside help.

HERE AND THERE IN INDUSTRY—More steel finishing and aluminum producing capacity will be added (p. 61) . . . Steel production last month was 187,610 tons higher than ever before in July (p. 63) . . . Production of large diameter welded steel pipe has begun at the $5 million plant of A. O. Smith Corp. of Texas in Houston (p. 64) . . .Steel mill equipment held up by the ban on shipments to Iron Curtain countries includes a complete slabbing and blooming mill that reportedly is available for resale in this country.



New Rycut Alloy Steel Cuts M* Costs 40%

**M stands for all machining and related costs including actual machining time, down-time necessary to re-grind tools and finishing time.*

Here's how:

1. Rycut, a medium carbon alloy, machines 25% to 50% faster than standard alloys of the same type, in either the annealed or heat treated condition.
2. Rycut generally increases tool life 100%—in some cases, as much as 300%.
3. Rycut requires less grinding after hardening due to its better machined surface finish.

These savings have been proved by the shop experience of Rycut users throughout the country as well as by carefully recorded machinability tests. Yet the initial cost of Rycut is practically the same as that of standard medium carbon alloys.

You need no special shop techniques with Rycut. It requires only conventional oil-quench and temper methods of heat treatment; also responds well to flame or induction hardening. And remember, a Ryerson Certificate of analysis and hardenability accompanies every shipment of annealed Rycut to guide its heat treatment.

This money-saving steel is available for immediate delivery—annealed or heat treated—in rounds, flats or squares, in a wide range of sizes. Just call your nearest Ryerson plant for test samples or an initial order. Write for technical bulletin explaining the advantages of Rycut.

Additional Saving—

Another important saving may be gained by concentrating a variety of steel requirements in a single order to your nearby Ryerson plant. Lower prices in the higher quantity brackets and economies in time and paper work add up to a substantial saving.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled & cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate
SHEETS—Hot & cold rolled, many types & coatings
TUBING—Seamless & welded, mechanical & boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
TOOL STEEL—Oil and water hardening
REINFORCING—Bars & Accessories, spirals, wire mesh
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JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
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STEEL
A PENTON PUBLICATION

Mobilization Pace Quickens

It's still slow, but a tank program is getting under way and military ordering is higher. Manpower shortages may arise in six to ten months

INDUSTRIAL mobilization is picking up speed. The pace is not yet exhilarating, but the acceleration is noticeable because:

1. The first plant in the country to be reconverted to war use was taken over by Cadillac Division of General Motors Corp. last week in Cleveland. Cadillac will reconvert a war-built bomber plant, which was converted into a general warehouse after World War II, to a plant to produce tanks. The Cadillac move (see the complete story below) is a major part of the Ordnance Corps' tank-building program.

2. Ordnance has also placed pilot orders for entirely new types of track-laying combat vehicles (see the complete story on p. 60). Military ordering, generally, is really quickening. As reported by the Department of Commerce in its weekly synopses of Defense Department contracts let for more than $25,000, metalworking orders are increasing. Five weeks ago when the synopsis service first started, only a scattering of metalworking contracts were reported. Now, they are totaling more than 70. Aircraft orders still lead the list, as they did at the very start, but the metal products now being ordered are more diversified than they were five weeks ago.

3. The threat of a skilled manpower shortage is more ominous (see the stories on pp. 60, 73, 77). Three to four weeks ago, Secretary of Labor Maurice J. Tobin saw no difficulties. Now he fears trouble in 6 to 10 months. He fears that in about 10 months the government may have to put ceilings on the number of employees non-essential industries may retain and to take steps to hold down turnover among war plant personnel. Civilian employment is now hovering around the 61.2 million mark, compared with 59.7 million a year ago. Unemployment is down to 3.2 million, compared with 4.1 million persons a year ago.

Cadillac Getting Set for Tanks

GM's Cadillac Division established a major industrial beach head in Cleveland last week and lost no time in deploying its forces for the Army tank building program.

Within 24 hours of the time it received the keys to Cleveland's bomber plant, Cadillac personnel were taking inventory of the place and planning further improvements: They had completed much of the work on layout for the machining and assembly departments while negotiations for the transfer of the plant were going on.

The Cadillac production contract is only part of a so-called Phase I in Ordnance Corps planning. Phase I is now complete; it consisted of surveys of facilities, production timetables, sources of supply, etc. Pertaining to tanks the Ordnance planning was broken down into these basic elements: Light tanks, Cadillac; medium tanks, Chrysler; engines, Continental Motors Corp.; transmissions, Allison Division of General Motors; cast armor, Continental Foundry & Machine Co.; and rolled armor plate, Carnegie-Illinois Steel Corp.

Hundreds of Suppliers—Over 600 suppliers are alerted to the requirements of Cadillac's tank operation. All major machining operations on the hull and turret will be handled at the refitted Cleveland plant which will need a work force of from 5000 to 6000.

Tank production is not new to Cadillac nor to many of its key personnel assigned to the Cleveland operation. Edward N. Cole, who will head the tank program, was well grounded in their production when Cadillac made M-5 and M-24 tanks in the last war.

Time, Tools, Tanks—Don E. Ahrens, general manager of Cadillac and a vice president of General Motors, says the timetable for tank production of tanks will depend on the speed with which the plant can be readied for tools and equipment. With the spirit of a well-organized team about to give the old college try, Cadillac personnel in Cleveland were promising to break records in getting tanks rolling. The consensus around Detroit was that Cadillac would be doing a bang-up job if it were building tanks by next June.

In getting the bomber plant Cadillac people think they are ahead of the game already. The main building housing the tank project has a floor area of 2,270,000 square feet.

Col. D. J. Crawford, commanding

ASSIGNMENT: TANKS—Don E. Ahrens, general manager of Cadillac Motor Car Division of General Motors, shakes hands with Col. David J. Crawford, commanding officer of the Detroit Tank Arsenal, as he accepts the new tank building assignment on behalf of his division. Edward N. Cole, on the right, is plant manager for the Cleveland Tank Plant. Col. C. A. Bassett, commanding officer of the Air Force base at Cleveland, is on the left; in the center is Col. W. A. Call who is from the Detroit arsenal

officer of the Detroit arsenal, now the only source of light and medium tanks, says the Ordnance Corps is seeking the widest possible dispersion of subcontracts on all tank orders.

Formidable Features—Cadillac executives are trying to solve their many problems as quickly as they appear, and there will be some tough ones. An example: One alerted supplier who made parts during World War II moved specialized machinery out of his plant. His plaint last week was who was going to pay the huge cost of moving the equipment back in?

The program has other formidable features, but they are encompassed in the tank itself. It is to be of completely new and advanced design. It will have more fire power than other tanks, higher speed and exceptional maneuverability.

Engines for the Cadillac light tank, like the engines for all other tanks in the whole tank program, will be of the Continental air-cooled type. Cadillac will use a 6-cylinder horizontal-opposed engine. Torque converter will be produced by Allison.

Ordnance Places Pilot Contracts

Ordnance's pilot orders for new track-laying vehicles go to four companies: International Harvester Co., Melrose Park, Ill., for armored personnel carriers; American Car & Foundry Co., Berwick, Pa., for self-propelled 150-mm howitzers; Pacific Car & Foundry Co., Renton, Wash., for 155-mm gun motor carriages; and Massey-Harris Co., Racine, Wis., for 155-mm howitzer motor carriages. Those contracts are a part of Phase II in Ordnance planning for track-laying vehicles of all types. Phase I dealt with tanks.

Cost of tooling and equipment for production of the vehicles will be paid for by the government. Unit prices will be figured by the contractors, subject to redetermination after production is in full swing.

Companies that desire to participate in the Ordnance program should contact the prime contractors, not Washington officials or Ordnance.

Tank Orders Placed

Baldwin Locomotive Works, Eddystone, Pa., says it has an order from Army Ordnance to fabricate and machine an undisclosed number of hulls for the M-46 General Patton tank, an improved version of the General Pershing tanks used in World War II. The hulls will be shipped to the Detroit arsenal where final assembly of all tank components will be completed by the company. Baldwin described its order as the second major tank order issued recently by Army Ordnance.

American Car & Foundry also got an order for combat tanks. ACF President Charles J. Hardy, who made the announcement, disclosed no further details. In the last war ACF produced and delivered over 15,000 tanks, most of which were of the light Jeb Stuart type.

Seeks Orders for Small Plants

A program aimed at getting military orders for small fabricating concerns in the Youngstown district is being set up by the Greater Youngstown Area Foundation. It will build up a file on small plant facilities to determine which ones can get military orders.

Mobilization Worry: Skilled Manpower

Machine tool builders and contract tool and die shops have the plant capacity, but a labor shortage could be the limiting factor in all-out defense work

TWO basic metalworking industries that can make or break America's rearmament program have the physical capacity to produce for defense, but skilled manpower is another story.

Big manufacturers of end products are dependent upon the relatively small machine tool and contract tool and die industries to give them the mechanical wherewithal for the mass production job. Both basic industries are concerned about skilled labor, although both are in as good or a little better shape than before World War II from the standpoint of employee quality and quantity.

A Decline Sets In—About 250 machine tool builders are in business today employing 36,000 wage earners. The industry employed 112,200 at the peak of its wartime activity in 1942. That fell steadily, to 109,700 in 1943, 79,000 in 1944, 66,700 in 1945, 59,700 in 1946, 54,300 in 1947 and 47,500 in 1948. The industry had 36,000 workers in 1939.

To produce on a scale comparable with 1942-43 levels, machine tool builders will have to triple their present labor force of skilled craftsmen. Some can be recalled who worked in the industry during the war but who went to other industries in the postwar years. But many of those are the less skilled workers. The problem of rebuilding the labor force will be largely one of training, a slow process.

Same Story — Some 2500 contract tool and die shops in the United States now employ about 45,000. During the war the industry consisted of about 4000 shops and employed 65,000. With the present labor force, the industry could handle a big-scale defense program—could start on it almost overnight—but it would have to drop many civilian jobs to do so. What's more, the cost of handling a large defense program would be high because the industry's employees would have to work a lot of overtime to get the job done.

Tool and die makers had a good apprentice training program started right after the war with the help of the Veterans Administration. Congress later slashed benefit payments for all training, and many veterans dropped their tool and die apprentice schedules. The program could be expanded, but as with training in the machine tool industry, tool and die employers would need time to get the skilled machinists.

No Question of Capacity—Both industries have enough plant capacity to do a big defense job. Machine tool builders' plant capacity has slipped from what it was in the peak war year of 1942 when $1320 million worth of machine tools were shipped, but it's still double what it was in 1938. The industry shipped about $200 million worth of machine tools in 1939, $335 million in 1946, $306 million in 1947, $288 million in 1948 and $249 million in 1949. That's far below what it could manufacture now if operating at full tilt; the shipments also explain why the industry has lost part of its labor force. The industry's production equipment now is in much better shape than it was before World War II.

Alternate Capacity—Nor will tool and die shops need to expand their facilities much. Some machine shops engaged in contract work other than tooling can switch over to making jigs and fixtures as they did in World War II if added plant capacity is required. Contract shops did $500 million worth of business annually during the peak war years of 1943-44. That slipped to about $300 million in 1947, but will climb to perhaps $315 million for 1950. Like the machine tool industry, contract tool and die shops have much better production equipment than before World War II.

Both these basic metalworking industries are busy now, but primarily

on civilian jobs. Defense ordering has not yet been substantial.

Renegotiation Again

Congress is considering a measure that would revive intact the World War II setup

THE HEADACHES caused by renegotiations on World War II contracts may be nothing compared with the migraines that will be aroused by a new renegotiation bill for the Korean emergency now being considered by Congress. That was the tenor of some of the testimony before the House Ways & Means Committee.

Shades of World War II—George Terborgh, research director of Machinery & Allied Products Institute, charges that the new bill would reinstate intact the renegotiation setup developed during World War II. He points out that "originally, renegotiation was a hastily conceived improvisation to facilitate the rapid placement of military contracts under the exigencies of all-out war. That was done through provision of a retroactive review of prices and profits on those contracts. There is no reason to suppose that the scope and organization of renegotiation appropriate to such conditions are the same as those appropriate for the kind of defense program now contemplated."

Mr. Terborgh says "retroactive renegotiation of profits should be kept at a minimum" because it impairs incentives to economy and efficiency with the threat of 100 per cent taxation of profits; because it places a psychological burden on management; because results of renegotiation of World War II contracts were very arbitrary; and because it creates inducement for careless buying.

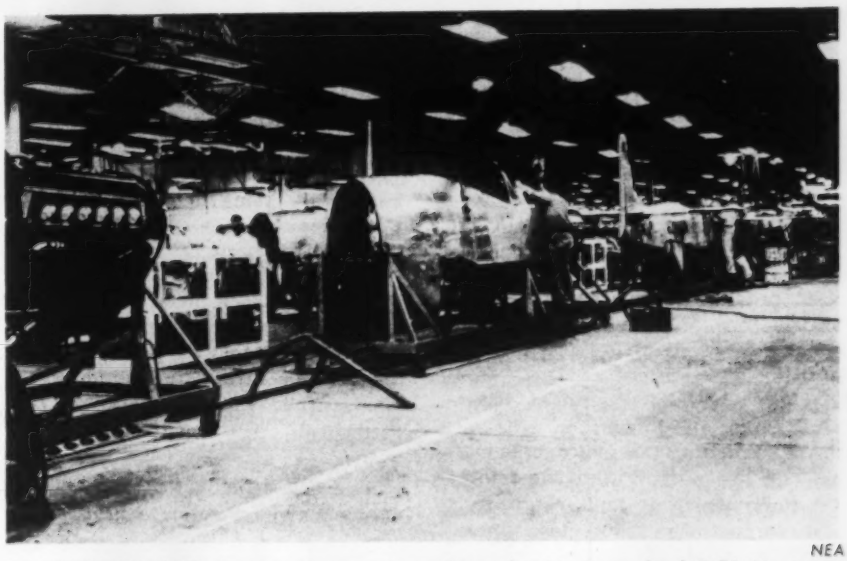
The Patchwork — Mr. Terborgh makes these recommendations for modifying the proposed measure:

1. Instead of making all government contracts and subcontracts renegotiable, save as exempted by administrative action, make them exempt except when made subject by administrative action.

2. Direct the Renegotiation Board to make renegotiable only contracts and subcontracts for which a fair and reasonable price cannot be determined at the time of placement by reference to the competitive market.

3. Exclude from renegotiation contracts and subcontracts that have been individually repriced under their own repricing clauses.

4. If universal renegotiability is continued, contrary to Recommendation 1, give statutory exemption to contracts and subcontracts for productive equipment and components.



NEA

REASSEMBLY LINE: From storage points where the Air Force had P-51 Mustangs stored since the end of World War II, some 200 are trucked to Temco Mfg. Co. at Grand Prairie, Tex. After the planes are demothballed they are practically torn apart and rebuilt by Temco. The reassembling lines are going at full tilt; the planes are returning to service in increasing numbers

More Steel and Aluminum Coming

CONTINUED GROWTH of metalworking companies' needs of materials is bringing out additional announcements of increased steel finishing and aluminum producing capacities.

Two United States Steel Corp. subsidiaries on the West Coast are to install additional facilities to roll hot-rolled sheets, cold-reduced sheets, and tin plate.

Swelling the output of aluminum will be idle aluminum plant equipment sold by the government to two existing aluminum companies and to two companies new to the primary aluminum production field.

U. S. Steel Expands

The U. S. Steel subsidiaries increasing steel finishing capacities are Geneva Steel Co. and Columbia Steel Co.

Geneva at its Geneva, Utah, plant will install facilities to produce an additional 100,000 net tons of hot-rolled sheets annually. Geneva's program embraces the erection of a new building at Geneva to house the new facilities. Work is to be started immediately and is expected to be completed and the equipment in operation by midsummer in 1951.

The Geneva wartime steel plant was purchased by U. S. Steel from the government in 1946 and converted to peacetime uses, with numerous new finishing and other facilities added to the original project. The Geneva plant provides, among other things, hot-rolled coils for conversion into sheets and tin plate products at Columbia Steel's mill at Pittsburg, Calif.

Quick Start—Columbia's expansion will be in facilities for turning out an additional 215,000 net tons of cold-reduced sheets and tin plate annually.

Work on the new facilities will start at once and it is expected they will be in operation by late summer in 1951.

At Pittsburg, the cold reduction sheet and tin plate mill placed in operation two years ago will be enlarged considerably to house the new equipment which will include: A continuous pickler; a four-stand cold reduction mill for cold-rolling steel up to 54 inches in width; an electrolytic cleaning line; an electrolytic tinning line; four additional coil annealing furnaces; a side trim and recoil line; and a continuous sheet galvanizer. The latter is a recent development in the steel industry and will be the first such equipment installed in the West.

Supplies from Geneva—Breakdown steel coils, the raw material for the Pittsburg sheet and tin mill, will continue to be supplied from the Geneva mill.

When Columbia's and Geneva's programs are completed the two companies will have a combined annual capacity of 640,000 tons of sheet and tin plate products, as well as a large capacity for production of other steel

products in demand on the West Coast.

The program at Pittsburg does not displace U. S. Steel's plans for expansion of facilities near Los Angeles; announcement about these will come later, the company says.

New Facilities for Aluminum

Expansion of the country's aluminum producing capacity by about 100,000 tons a year will come from sale by the General Services Administration of rectifiers and pots from the idle aluminum plants at Riverbank, Calif., and Burlington, N. J.

Apex Smelting Co., Chicago, is buying one line of pots and one line of rectifiers, which it will install in a new plant to be built near Grand River Dam in Oklahoma. This company has been in the secondary smelting business, but with the new equipment will go into primary aluminum production.

Harvey Machine Co., Torrance, Calif., is purchasing one line of rectifiers. This company now operates an extrusion plant, but will begin production of aluminum in a new plant to be built near Hungry Horse Dam, Montana.

Reynolds Metals Co. is buying one line of pots and one line of rectifiers for installation in its present plant at Jones Mills, Ark.

Kaiser Aluminum & Chemical Corp. is purchasing two pot lines and one line of rectifiers for use in a new plant to be built in Ohio near New Haven, W. Va. It is understood that one of the pot lines will be used to match up with a line of rectifiers which it now has, so that the company will have a total of two additional pot line operations.

The Munitions Board, which authorized the sale of the government-owned equipment, said that a condition of the sales is that production with the additional equipment be forthcoming within a year. In some cases it may result as early as next March.

The board explained that the sales will bring about increased aluminum production in about the same time that it would take to reactivate the plants at Riverbank and Burlington.

It is expected that the buildings at Riverbank and Burlington will be available for essential industries.

Stanley To Get Heating Furnace

A slab heating furnace to serve a strip mill of the Stanley Works at Bridgeport, Conn., is being designed and will be built by Rust Furnace Co., Pittsburgh.

The triple-fired furnace, to burn oil, will have a capacity of 50 tons an hour. Construction is planned for early fall.

Canadian Plant Enlarges

Plant enlargements costing $13 million are being made by Dominion Foundries & Steel Ltd., Hamilton, Ont., Canada.

Contracts involving $9 million already have been awarded for construction of a blast furnace and coke ovens. John Mohr & Sons, Chicago, have the contract for building the blast furnace and Koppers Co. Inc., Pittsburgh, will construct the coke ovens.

Bids are being called for building of dock and unloading facilities.

Plans call for completion of the improvement program within a year.

Sinter Plant at Thomson Works

U. S. Steel's program to enlarge the steel capacity of its Carnegie-Illinois mills by 1,660,000 tons annually

SINTER INTO SMALLER CHUNKS
. . . next step storage

gained momentum last week when a new sintering plant started operating at Edgar Thomson Works in Braddock, Pa.

The new facility, using heat to agglomerate iron-bearing flue dust and ore fines, will recover over 400,000 tons of high grade ore annually for the blast furnaces of the Thomson Works. The important result: Ore supplies will be conserved and pig iron production increased.

The plant has a rotary cooler in which the sinter is air-cooled instead of water-cooled; that should make for a better product. Also on the schedule is a sintering plant at the Homestead District Works that will increase the productive capacity o U. S. Steel's Pittsburgh district mills

For Sale: Open-Hearth Capacity

Machined Steel Castings Co., Alliance, O., is voluntarily liquidating A large plant with 100,000 square feet of heavy industrial buildings, it has open-hearth capacity that was used by Ford Motor Co. and others when steel was in very short supply. The plant is readily adaptable for heavy fabricating; its cranes range in capacity up to 30 tons and span up to 90 feet.

Loftus Gets Italian Contract

Loftus Engineering Co., Pittsburgh, received a $500,000 contract to design and supervise construction of five open-hearth furnaces for the Finsider company, owned by the Italian government.

These furnaces, each with a capacity of 200 tons, will be installed in the Cornigliano Works, near Genoa in northern Italy.

Buildings for the plant were constructed just before World War II, and some operations were ready to start when the Germans moved out. They took some of the equipment to West Germany but most of this has been returned.

In addition to the open hearths, blast furnaces also will be built.

'Big Three' of Steel Shipments

Cold-rolled sheets, hot-rolled bars and hot-rolled sheets continued in June to be the "big three" of finished steel.

An American Iron & Steel Institute report shows that of all tonnage of steel shipped from mills in June, cold-rolled sheets accounted for 12.4 per cent, hot-rolled bars 11.2 per cent, and hot-rolled sheets 10.7 per cent.

Plates, constituting 7.2 per cent of all tonnage, were the next most important product tonnagewise. This figure set before start of the Korean war does not reflect the war-spurred demands for plates for railroad freight cars and armament. It will increase in coming months.

Mill shipments for steel in June totaled 6,192,438 net tons. This amount consisted of 5,753,287 tons of carbon steel, 401,560 tons of alloy steel, and 37,591 tons of stainless steel.

During the first six months of this year, mill shipments of steel totaled 34,563,607 net tons. The "big three" products ranked as follows: Cold-rolled sheets, 4,465,562 tons, or 12.9 per cent; hot-rolled bars, 3,913,451 tons, or 11.3 per cent; and hot-rolled

sheets, 3,781,285 tons, or 10.9 per cent.

Steel Output Soars in July

Steel production last month was 8,087,610 net tons, higher than ever before in July, says the American Iron & Steel Institute. The output of the first seven months of 1950—55,194,337 tons—also set a record.

The month's production was about 2,303,000 tons above that of July, 1949. It was about 600,000 tons higher than in July, 1944. Output for the first seven months was more than 3.4 million tons over the similar 1949 period.

During the first half of 1950, annual capacity was increased 1,170,700 tons. The new capacity of ingots and steel for castings as of July 1, 1950, is 100,563,500 tons annually. More expansion programs will boost that potential to nearly 106 million tons by the end of 1952.

Every day, the finished steel made from 24 hours of full output of ingots and castings in the U. S. will provide steel for all these items: An aircraft carrier, 500 airplanes, 1000 antiaircraft guns, 500 tanks, 500,000 3-inch shells, 1000 howitzers, 2000 aerial bombs, two heavy cruisers, 1000 freight cars, 2000 trucks, 2 cargo ships, 2 tankers, 12,000 autos, 2000 homes, 20,000 household refrigerators and 20,000 stoves. What's more, 20,000 tons of steel will remain for other purposes.

The steel companies can provide 2240 pounds of steel for every 2000 pounds needed when World War II was at its height. The output of steelmaking furnaces, operated fully for a year, will now yield nearly 14 million tons more steel than was made in all the rest of the world combined in 1949.

About 1332 pounds of steel for each person in the U. S. can be provided yearly with the present capacity, compared with an estimated 256 pounds made for each person in Russia last year, 992 pounds in the United Kingdom and 486 pounds in France.

Eight Ways To Prevent Plant Sabotage

IS YOUR PLANT protected by an adequate security system? Are you prepared to prevent damage from sabotage? Have you a plan to get back into production in case of disaster—as from a bombing?

Get Busy—A Department of Defense spokesman says every manufacturer should get busy right now on the following 4-point program: 1. He should review everything he did during World War II to protect his plant against sabotage; 2. he should revive as many of these protective measures as he feels are warranted now and which are justifiable within his budgetary limitations; 3. he should lay plans to bring his plant security program, in case of a future emergency, to the full level of World War II; and 4. he should make allowance for the fact that there are more subversives in the country today than in World War II, and that we face a new hazard due to enemy possession of the atomic bomb.

Those plants engaged in producing items that are vital to the military, or the civilian economy, or both, naturally are expected to adopt really effective programs.

Eight Things To Do — In such plants, a Defense official told STEEL:

1. Admission of visitors must be controlled and visitors must be under careful observation.

2. Employee pass systems should be reinstituted.

3. A more careful screening is needed before hiring new personnel.

4. Suspected subversives on the plant payroll—if there be any—must be given more careful scrutiny.

5. A plant guard system should be created if necessary, or the present plant guard system expanded if that is desirable. Training of the guards must be adequate, they should be uniformed if possible, and they should be capably officered.

6. Employee loyalty systems, on the order of those that proved so successful in World War II, should be inaugurated in order that employees may be encouraged to accept a measure of responsibility for plant security.

7. Report special security problems, or sabotage threats, to the FBI or the Department of Defense.

8. Encourage the institution of a civil defense organization in your community and co-operate in making it effective.

Read These — To become familiar with the hazards set up by enemy possession of the atomic bomb, all personnel officers are urged to read carefully the new book just published by the Atomic Energy Commission under the title "The Effects of Atomic Weapons." This book is available at $1.25 from the Superintendent of Documents, Washington 25.

What To Do If A-Bomb Drops

As a company executive, you'll have nothing to worry about if an atomic bomb drops on or within a half mile of your plant. If you're outside that limit, advance planning against blast, burn, incendiary effects and radiation can save lives.

That advice is from a list of protective measures summarized by the National Industrial Conference Board. It's based on lectures and publications of the Atomic Energy Commission, the handbook "The Effects of Atomic Weapons," and other sources.

In evolving a program remember that the bomb burst is seen before the explosion is heard and major bomb casualties result from fire. Nuclear radiation from the bomb is likely to produce more hysteria than casualties. If a plant suffers a direct hit, little, if anything, can be done. Many lives can be saved outside the immediate blast area between the time when the explosion is seen and when, a split second later, it is heard.

Warn employees out of doors:

1. Not to look in the direction of the explosion.
2. To turn away from the light and crouch behind any shelter available.
3. To drop to the ground and curl up if shelter is more than a few steps away.

Warn employees indoors to:

1. Drop to the floor with backs to windows or open doorways.
2. Crawl underneath a desk, table or counter if available.
3. Keep to the interior portions of the building, if possible.

Period 1950	—Open-hearth— Net Tons	% Capac.	---Bessemer--- Net Tons	% Capac.	------Electric------ Net Tons	% Capac.	---Total--- Net Tons	% Capac.	Calculated Net Tons Weekly	No. weeks in mo.
Jan.	7,131,519	96.5	379,252	80.6	419,601	71.9	7,930,372	93 9	1,790,152	4.43
Feb.	6,142,178	92.0	255,565	60.2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	265,726	56.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
May	7,597,837	102.8	437,006	92.9	517,044	88.6	8,551,887	101.3	1,930,449	4.43
*June	7,218,570	100.9	406,944	89.3	506,001	89.5	8,131,515	99.4	1,895,458	4.29
*2nd Qtr.	22,131,140	102.0	1,251,859	90.6	1,513,075	88.2	24,896,074	100.4	1,913,611	13.01
*1st Half	42,152,517	97.7	2,152,402	78.3	2,801,808	82.2	47,106,727	95.5	1,820,902	25.87
†July	7,227,795	97.0	380,317	79.8	479,498	79.9	8,087,610	94.9	1,829,776	4.42

Note—The percentages of capacity operated are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. Beginning July 1, 1950, the percentages of capacity operated are calculated on weekly capacities of 1,685,059 net tons open hearth, 107,806 net tons bessemer and 135,856 net tons electric ingots and steel for castings, total 1,928,721 net tons; based on annual capacities as of July 1, 1950, as follows: Open hearth 87,858,990 net tons, bessemer 5,621,000 net tons, electric 7,083,510 net tons, total 100,563,500 net tons.

* Revised. † Preliminary figures, subject to revision.

'Piping Hot' Pipe Start

A. O. Smith Corp. of Texas lost no time in getting into pipe production in Houston

PRODUCTION of large diameter welded steel pipe for the nation's oil and gas industry has begun at the $5 million plant of A. O. Smith Corp. of Texas in the Houston Ship Channel industrial area. Completed on schedule the first of this month by Austin Co., the plant was turning out "big inch" pipe in increasing volume after a few days of shakedown operation.

A. O. Smith Corp., Milwaukee, and Sheffield Steel Corp., a subsidiary of Armco Steel Corp., are joint owners of the pipe mill. It is scheduled to reach capacity production—40,000 tons of pipe per month—in October, D. F. McCarthy, vice president and general manager, says. Employment at the plant is 400.

Next Door Neighbor—Sheffield has in partial production at its nearby plant a new plate mill that will produce skelp for the pipe mill and increase the supply of plate available for other purposes, says F. R. McFarland, Sheffield division manager. The new Sheffield facilities created several hundred additional jobs.

The plant will be operated on a three-shift basis, 25 production days per month. It is equipped to make pipe in sizes from 16 to 36 inches. Additional facilities to be installed later will broaden its range from 8⅝ to 36 inches.

Hy-Pro Now in Its New Plant

Hy-Pro Tool Co., New Bedford, Mass., manufacturer of nationally distributed Hy-Pro taps, slotting saws and allied metal cutting tools, and insert bits and holders, is now completely established in its large new plant. A subsidiary of Continental Screw Co., Hy-Pro adjoins the plant of its parent company in quarters double their former size.

DeLuxe Metal Sold to Royal

Royal Metal Mfg. Co., Chicago, bought the DeLuxe Metal Furniture Co., Warren, Pa. Purchase price was not disclosed by H. A. Green, vice president in charge of sales for Royal, who made the announcement. The transaction involved all the property of DeLuxe, its land, buildings and equipment. Royal will expand DeLuxe so it can begin producing Royal products and serve Royal customers in the East. Royal also has plants in Los Angeles, New York, Preston, Ont.; a new building is also being completed in Galt, Ont.

NEXT TO THE LAST STEP
. . . presses oval shape to finished form

National Supply Broadening Line

National Supply Co., Pittsburgh, took steps to broaden its existing sales and service facilities and the horsepower range of diesel engines shortly after it bought the assets of the engine division of Atlas Imperial Diesel Engine Co., Oakland, Calif. (STEEL, Aug. 7, p. 60).

Clinton Triples, Quadruples

With the purchase of its large new factory at Maquoketa, Iowa, Clinton Machine Co. more than tripled its area for manufacturing its Clinton engines. The new plant has 120,000 square feet of floor space under one roof. The company's entire facilities at Clinton, Mich., total 54,000 square feet under three roofs. Although actual floor space is tripled for manufacturing engines, actual manufacturing capacity is quadrupled because of layout and design.

Goss To Build $4 Million Plant

Goss Printing Press Co., Chicago, manufacturer of web rotary printing presses, will start work immediately on the first unit of a new plant to cost $4 million for land and building. It will be built on a 20-acre tract in Cicero, Ill. R. C. Corlett, president, says the first unit—200,000 square feet of floor space—will be one story in height and used for light machining operations and storage.

Solar Purchases Miller Business

Solar Steel Corp., Cleveland, bought the business of Miller Steel Sales Inc., Philadelphia. Under purchase arrangements Solar acquires the Miller plants in Philadelphia. They will be operated as the Philadelphia Division and will stock a complete line of general steel products, serving customers in the greater Philadelphia area. Sol H. Friedman, president of Solar, also announces the intention of doubling the size of Solar's Union, N. J., plant.

Whitcomb Builds Hydraulic Unit

Whitcomb Locomotive Co., Rochelle, Ill., is building a series of industrial diesel locomotives, featuring a hydraulic drive. The units are available in sizes up to 25 tons. The hydraulic drive is offered to save engine wear and to reduce operator fatigue and accident hazards.

Harvester Starts a Big One

International Harvester Co. will begin construction of a $5 million service parts depot and machine transfer in Broadview, a suburb of Chicago. Within two weeks work will be started on the one-story building that will spread over about 26 acres. The new site will be Harvester's largest product distribution center and one of the biggest in the U. S. The depot—the ninth of twelve such units that the company is building throughout the country — will serve as a wholesale parts distribution center.

The machine transfer will distribute motor trucks, farm tractors, farm implements, industrial power equipment to a wide area. It will not make shipments abroad. Harvester will employ about 850 persons in the new operation. Completion of the building is expected by late 1951.

Tungsten Carbide Tool Sold

Tungsten Carbide Tool Co. was sold by Michigan Tool Co. to A. E. Tozer who has been general manager of the company since its founding in 1928. The company produces special and standard tools, ranging from single point tools to milling cutters. A new plant on Seven Mile road in Detroit is currently under construction; Tungsten Carbide Tool expects to move into the new quarters about mid-September. Pending completion of the plant, it is maintaining operations at its Joy road plant, Detroit 6.

While Michigan Tool is discontinuing manufacture of general purpose carbide tools, it will continue to produce carbide-tipped tools used for gear production purposes and high-speed tools.

Stamets Buys Enterprise

Enterprise Co., Columbiana, O., manufacturer of machinery since

1878, was purchased by Wm. K. Stamets Co., Pittsburgh. Stamets, primarily a machine tool distributor, also designs and builds special machinery. It specializes in pipe mill machining equipment—pipe threading machines, coupling tapping and boring machines, pipe handling tables and the like. Enterprise was acquired for use as a manufacturing plant for such equipment, but it will also continue operating as a contract shop.

Machine Tool Business for Sale

The long-established machine tool producing business of Taylor & Fenn, Hartford, Conn., is being voluntarily liquidated.

The company will concentrate its future activity on production of alloy gray iron castings in a foundry now under construction in Windsor, a Hartford suburb.

The old plant real estate has been sold and Industrial Plants Corp., 90 W. Broadway, New York, has been engaged to dispose of: 1. All machinery and equipment; 2. selling rights of Taylor & Fenn machine tool line, which includes its spline miller, automatic forming machines, drills and spring presses; and 3. all patterns, drawings, good will and work in process.

For some time the foundry business has been growing and becoming an increasingly important proportion of the Taylor & Fenn operations.

Taylor & Fenn is one of the oldest machine tool companies in the United States. It was founded in 1834 as Phoenix Iron Works by Levi Lincoln, pioneer Hartford industrialist and direct ancestor of the Taylor family.

Fairchild's Pack Plane Carries Detachable 'Pod'

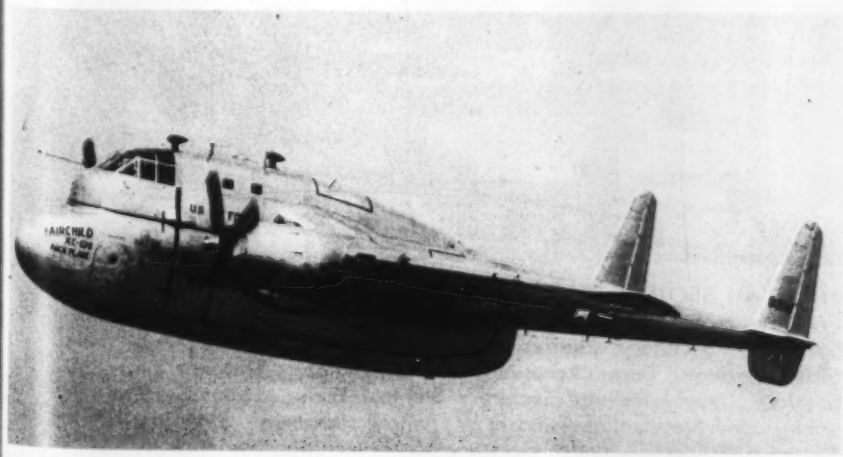
THE NEW MILITARY transport that promises to pioneer a new concept of air transportation and solve some of the more pressing logistics problems made its first successful test flight. It's the Fairchild XC-120, a military carrier with a detachable fuselage. The test flight conducted at Hagerstown, Md., was made with the detachable cargo-carrying fuselage or "pod" attached.

Although wind tunnel tests indicate the plane minus its pod will have satisfactory flight characteristics, the XC-120 will go up soon without its fuselage—but only after more extensive tests with the fuselage attached and additional ground taxi tests.

Easier than Shelling Peas — The chief advantage of the Pack Plane is that it eliminates the long, expensive periods on the ground while its cargo is being unloaded. Fairchild engineers envision a Pack Plane flying into a forward area, having its fuselage detached immediately, and the plane returning to a rear area for another cargo. Once on the ground a pod can be unloaded at a time convenient to ground crews. Pods have front and rear clamshell doors that open the entire cargo compartment for quick, direct loading and unloading.

Pick-a-Back Machine Shop?—Fairchild officials are optimistic about another possible feature of the plane: As alternates to unloading pods, they themselves can consist of built-in units—hospitals, machine shops, operations control towers, communications centers, offices, etc.

The XC-120 is powered by two 3250-horsepower Pratt & Whitney engines. The detachable compartment has a 2700-cubic foot capacity and can carry up to 20,000 pounds. Fully loaded, it weighs about 64,000 pounds, carries a crew of five.



FAIRCHILD: CARGO-CARRYING FUSELAGE ATTACHED TO "MOTHER PLANE"
. . . its maiden flight was a success

Centrifugal Foundry Expands

One of the midwest's few centrifugal foundries, Wisconsin Centrifugal Foundry Inc., is completing a $50,000 expansion program at Waukesha. The company has increased its working force from eight to 28 men and spread into 11,000 square feet of foundry area. M. E. Nevins, president, says sales this year should be about $500,000. Customers include aircraft, diesel engine and power equipment industries.

Plastics Plant at Parkersburg

A new unit of the Du Pont Co.'s plastics plant near Parkersburg, W. Va., went into commercial production of Teflon tetrafluoroethylene resin, an industrial plastic that is resistant to chemicals and heat and is one of the best known insulators.

The new unit makes available to the chemical and electrical industries and other users of Teflon a productive capacity several times that of a plant at Arlington, N. J., where the manufacture of the plastic in relatively small commercial quantities was started in 1943.

Kenilworth Opens Warehouse

Kenilworth Steel Co., opened its new plant at Kenilworth, N. J. It offers metropolitan New York, eastern and New England states warehouse service. Products to be stocked initially are entirely in the flat-rolled metal category in gages from 0.001 to 0.187 inch.

Its new building has an area of about 50,000 square feet. Facilities of Kenilworth include three slitting lines with capacity up to 36 inches wide and cutting to length equipment handling material up to 36 inches wide.

Porcelain Metal Products Sold

Porcelain Metal Products Co., Pittsburgh, porcelain enameler, steel fabricator, designer and engineer, was sold to a new group of owners. Included in the new group are three present executives. A. F. Petan, plant manager since 1939, is the new vice president in charge of production; E. J. Ranz, present purchasing agent, becomes treasurer; W. C. Klink, supervisor of material control, continues in that capacity.

Porcelain Metal Products does porcelain enameling for Shell Oil, General Electric, Pittsburgh Plate Glass, Standard Oil of Ohio and Indiana, Tydol, Amoco, Gulf Oil and Skelly. The company also fabricates for local Pittsburgh concerns as well as for Weirton Steel Co.

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

National Security Resources Board doesn't think the machine tool "phantom order" program is a flop and it points out a few reasons for thinking it isn't

IRKED by reports that the machine tool "phantom order" program is a flop, National Security Resources Board spokesmen declare it not only a live but a permanent program. They say it is subject to continual scrutiny and is occasionally revised so tools specified in phantom orders are those of the latest designs in actual production.

Quick Start, Cash, Priorities—Objects of the plan, an NSRB official told STEEL, are: To enable the machine tool industry to get a rapid start toward maximum production of the kinds of tools that would be required in an emergency (conversely, to prevent the months of delay that would be incurred if the industry had to wait for firm purchase orders from defense contractors); to supply the industry with cash to finance necessary expansion (the phantom orders provide for advance payment of 30 per cent of the dollar size of the orders); and to assure priority on delivery of raw materials (manufacturers holding the phantom orders are assured of the AA priority rating on their supplies).

Advance Action—"The plan," said this spokesman, "is an adaptation of the machine tool order pool program of World War II when requirements were grouped and the different kinds of machine tools ordered in numbers conducive to efficient production and earliest possible delivery. More than $2 billion of orders were placed from the pool in World War II. We did not develop that procedure until after the war had been in progress for a long time. This time, by advance action, we will save months of delay in setting up a machine tool order pool to meet the next emergency.

Requisites: Emergency, Funds — "The phantom orders are merely schedules of emergency production, to enable the industry to do some planning ahead.

"The phantom orders would be activated only after declaration of a national emergency and after Congress had made funds available. In the meantime, the manufacturers holding them will know just where they stand in case of a national emergency."

The phantom orders, or schedules of emergency production, that have been placed in the machine tool industry call for a government outlay of about $750 million. They involve about 100,000 machine tools, to be made by 200 manufacturers. They will enable the manufacturers to get into war production without delay; but they will not represent all the war business these manufacturers will get. They will cover merely the introductory period—until such time as a full wartime machine tool order pool could be set up.

In Charge of Ghosts—Other phantom orders that have been placed involve $75 million of cutting tools to be made by some 100 firms and $22 million of gages to be furnished by 12 producers. Consideration has been given to the possible placement of phantom orders for other equipment—foundry apparatus and heat treating furnaces—but action has been held up because of difficulties in setting up acceptable specifications for the apparatus.

In charge of the phantom order program, as consultants to the National Security Resources Board, are the same men who had charge of the machine tool order pool in World War II. They are Capt. E. R. Henning (U. S. N. Ret) and Brig. Gen. Stewart E. Reimel (U. S. A. Ret).

Labor In on Mobilization Policy

Labor leaders and friends of labor are six of the 12 members of a new Committee on Mobilization Policy of the National Security Resources Board announced by NSRB Chairman W. Stuart Symington. Labor members include William Green, AFL; Albert J. Hayes, International Association of Machinists; and Philip Murray, CIO.

Committee's public members include Senator Frank P. Graham, formerly a member of the War Labor Board; George H. Mead, also a former member of the War Labor Board; and Mrs. Anna M. Rosenberg, long prominent in labor matters.

Industry members are Marion B. Folsom, Eastman Kodak Co., Rochester, N. Y., and chairman, Committee for Economic Development; Otto A. Seyferth, president, United States Chamber of Commerce, president and director, West Michigan Steel Foundry Co. and Austin Trailer Equipment Co., Muskegon, Mich.; and Claude Adams Putnam, Keene, N. H., president, National Association of

NEA

NATIONAL SECURITY RESOURCES BOARD: NSRB poses for its first picture since W. Stuart Symington became its chairman. Seated clockwise around the table: Commerce Secretary Charles Sawyer; Interior Secretary Oscar Chapman; State Secretary Dean Acheson; Mr. Symington; Treasury Secretary John Snyder; Deputy Defense Secretary Stephen Early; Labor Secretary Maurice Tobin; and Presidential Assistant W. Averell Harriman. Standing, left to right: Clarence McCormick, under secretary of Agriculture; Frederick Lawson, budget director; John Steelman, presidential adviser; Hubert Howard, chairman of the Munitions Board; and Robert Smith, vice chairman of NSRB

Manufacturers and president, Markem Machine Co. Mr. Seyferth, incidentally, was an AFL union official before becoming a manufacturer. The committee, Mr. Symington said, "will advise the chairman on all phases of civil mobilization and defense."

CCC Lets Grain Bin Contracts

Contracts for bin-type and comparable grain storage structures just let by the Commodity Credit Corp., Department of Agriculture, in preparation for grain to be turned over to CCC this fall under price support programs call for 30,000 tons of galvanized steel sheets and 7700 tons of aluminum sheets. The total awards call for 20,766 structures with capacity for 88,826,040 bushels. Of these 12,450 are to be steel round bins, 7516 aluminum round bins. Awards for steel and for aluminum bins went to:

	No. of Structures
STEEL (Round Bins)	
Black-Sivalls & Bryson Inc., Kansas City, Mo.	3,000
Beatrice Steel Tank Mfg. Co., Beatrice, Neb.	1,000
Columbian Steel Tank Co., Kansas City, Mo.	2,200
Kilby Steel Co., Anniston, Ala.	1,500
Butler Mfg. Co., Kansas City, Mo.	2,750
Steelcraft Mfg. Co., Rossmoyne, O.	1,000
Western Engineering & Construction Co., Minneapolis	1,000
Total Steel Round Bins	**12,450**
ALUMINUM (Round Bins)	
Bishop Mfg. Co., Carlisle, Iowa	300
Edwards Mfg. Co., Cincinnati	2,000
Fox Metal Products Corp., Ft. Logan, Colo.	1,000
Gemco Engineering & Mfg. Co., Cincinnati	1,500
Peterson-Heaton, Inc., Los Angeles	500
Columbian Steel Tank Co., Kansas City, Mo.	216
Butler Mfg. Co., Kansas City, Mo.	2,000
Total Aluminum Round Bins	**7,516**

The Commerce Department sent a letter to galvanized producers asking that 30,000 tons of galvanized sheets be made available to eight named producers of grain storage bins. The letter made no suggestion about how much steel each producer sell or to what firms.

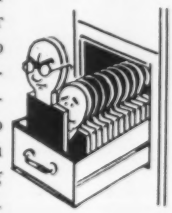
Want One in Your Home Town?

If you are eager to have an up-to-date small business conference staged in your hometown, get in touch with one or more of your representatives in Congress. These conferences were initiated by Sen. William Benton (Dem., Conn.) who brought a group of top-flight government officials to Bridgeport in July. Other legislators copied the idea and have staged similar affairs in Chicago, Baltimore, New Haven and Hartford. Similar meetings are to be held in Minneapolis Aug. 31, Cleveland Sept. 18 and Grand Rapids Sept. 19.

The meetings are day-long affairs; at them informed government men explain how small business does business and can do business with the government.

Nat'l Science Register Set Up

James C. O'Brien was shifted from his job as manpower expert with the National Security Resources Board to the directorship of the National Science Register recently set up in the Office of Education, Federal Security Agency. In this capacity he is bringing up-to-date the government's roster of scientific manpower and attempting to evaluate the competencies of scientific workers who are expected to be in great demand during emergency periods.



Scrap Men Petition on Freight

After about 15 months of fruitless effort to get the railroads to reduce present freight rates on iron and steel scrap, the Institute of Scrap Iron & Steel is going to petition the Interstate Commerce Commission for a formal proceeding. Acting on behalf of the scrap industry, the institute seeks a reduction of approximately 20 per cent in all existing ferrous scrap freight rates. The institute says in many instances freight rates on finished steel products now are lower than the rates of scrap between the same points. Howard Gould, of Gould & Gould, Cincinnati, is counsel.

Loans for Taconite Production

Long-term loans to expand production of taconite concentrate will be permissible under Title III of the Defense Production Act of 1950, thinks Chairman Brent Spence (Dem., Ky.) of the House Banking and Currency Committee. No additional legislation would be needed, he believes, to enable the government to advance whatever amount of money is necessary to develop that industry. Mr. Spence gave his opinion when he answered questions by Rep. John A. Blatnik (Dem., Minn.), who several months ago introduced a taconite loan bill.

Section 302 of Title III of the Defense Production bill would authorize the President to make, guarantee, or participate in, loans "to private business enterprises for the expansion of capacity, the development of technological processes, or the production of essential materials—without regard to the limitations of existing law and on such terms and conditions as the President deems necessary."

'Encouraged' About Reclaiming Manganese

ENCOURAGED by progress in the Bureau of Mines' attempt to reclaim manganese from slag from open-hearth furnaces using Lake Superior ore, the American Iron & Steel Institute made a second contribution of $50,000 in support of the work. The 1951 appropriation bill now in final process in the Senate also contains a grant. With the additional funds the bureau expects to conclude its manganese reclamation campaign by next spring.

Suitable for a Cold Charge—Key unit in this work is a special blast furnace under construction at the Pittsburgh Experiment Station. Equipped with modified stoves designed to give hot-blast temperatures well above 2600 degrees fahrenheit and having capacity for producing eight tons of spiegeleisen daily, the furnace is to be ready this fall to start operations on charges of reject open-hearth slag. Its product will be spiegel containing 20 to 25 per cent manganese and 3 to 4 per cent phosphorus. The spiegel will be put through a basic-lined bessemer converter that is already a part of the station's equipment. It is expected that, by selective oxidation, two products will be obtained. First, the manganese will be oxidized from the spiegel to produce a synthetic manganese ore. Second, the phosphorus will be blown out, leaving high-purity metal suitable for cold charging into open-hearth furnaces.

Reduction of Imports?—Although bureau spokesmen aren't making optimistic predictions, they admit "growing encouragement." Test work already is completed with material duplicating the high-phos spiegel they will get from the blast furnace this fall. The material was produced by melting ferrophosphorus and standard spiegel together in proper proportions. From it they obtained synthetic manganese ore containing well over 60 per cent manganese.

If the present hope materializes, a process will be available for reclaiming, say, some 300,000 net tons of manganese yearly now being wasted in steel plant slag dumps. Because the resulting synthetic ore would contain better than 60 per cent manganese, the need for imported 48 per cent ore would be reduced by some 600,000 tons yearly.

Bat Nearer 1.000 through

Better Equipment Replacement

By JOHN S. MORGAN

PAPER work, mathematics and diplomacy—they're a few of the elements that go into a direct approach by industry to reform the nation's depreciation and re-equipment policies.

A scientific equipment replacement program in your company is a direct step toward reform and will save you money, besides.

Other steps toward reform—pressure on Congressmen or revised annual reports to show the extent of inflation—are essential but indirect ways to get the government to revise its tax depreciation policies. More positive action is possible with a capital re-equipment program, a problem closely related to tax depreciation. The two subjects are related because:

1. Inadequate tax depreciation means inadequate funds for a re-equipment program.

2. The archaic schedule of useful lives set up for tax depreciation purposes by the Bureau of Internal Revenue in Bulletin F is a psychological block for many companies' replacement because they hate to discard a machine that still has a few years' tax credits in it even when a new machine may be better. The tax phase of the whole problem has been discussed in STEEL articles, May 8, June 19 and July 31.

Many companies today have a by-guess-and-by-gosh replacement program that is causing as much damage as the government's tax depreciation policies.

Gaining momentum is a drive for scientific replacement, spurred by the work of Machinery & Allied Products Institute and other associations. MAPI Research Director George Terborgh's *Dynamic Equipment Policy* and *MAPI Replacement Manual* are becoming the bibles for companies seeking to improve their re-equipment plans.

Is the MAPI program practical? Who's tried it?

Barber-Colman Co., Rockford, Ill., maker of machine tools, electric apparatus, textile machinery and many other products, has had a formal replacement program since the early 1920s. The company has refined its ideas recently according to MAPI suggestions. Harris-Seybold Co., Cleveland, manufacturer of lithographic printing presses and related products, has had a program operating four years similar to the MAPI formula. Warner & Swasey Co., Cleveland, maker of machine tools, textile machinery and construction equipment, has started to supplement its replacement program by using the MAPI formula.

MAPI has developed a formula to help you decide when and where to replace your equipment. It takes into account direct labor savings, supervisory and administrative costs, maintenance costs, cost of supplies, power savings, floor space savings, taxes, insurance and quality and capacity factors. In the past, management has erred in taking into account just a few of these factors in its replacement calculations.

Barber-Colman, Harris-Seybold and Warner & Swasey all find that a successful program requires:

1. A combination engineer-diplomat to run it.
2. Patience to get it working and to get results.
3. Willingness to spend money for the equipment decided upon.
4. Top-management support and understanding.
5. Foremen's co-operation. All three companies have found that men in the shop first viewed the program with suspicion, as just a fancy way to say "no" to equipment requests. Co-operation can be obtained by fast action on all requests.

"There's a lot of poor replacement now going on," says Duncan J. Stewart, vice president of Barber-Colman and responsible for much of his company's interest in replacement analysis. Barber-Colman's long experience shows that the job to get better replacement is a matter of evolution, not revolution. Over the years, the company has evolved this set-up:

Replacement analysis is organized as part of the Barber-Colman methods department. All requests for replacement are referred to it. The analyst there gets together the necessary figures and prepares the analysis. That involves going to as many as ten people for maintenance, power costs, etc. The analyst also investigates all alternatives, whether a whole new plant layout would be better if new equipment is purchased, whether a new machine should be purchased to perform a job now done on several machines, etc. Requests for replacement analysis may be initiated by any of the supervisory force or may

originate with the methods department, itself. That department also attempts to make a routine check of all production machinery every two years.

With Barber-Colman, the most common case presented for analysis is the straight replacement of one machine by a similar device. A second common type involves replacement of one machine with a different type of machine, not just a new model. Perhaps the new machine does two operations at once. Another common case is a machine to replace a manual operation, as in materials handling devices. Still another common type is a straight expansion problem, where the alternatives are either not to increase production or to do it by subcontracting.

Harris-Seybold's replacement program is on a five-year basis and is administered by John O. Archer, an industrial engineer. The program averages about 40 projects a year and costs about $500,000 annually. In fiscal 1948-49, Harris-Seybold had a net saving of $80,000 on a capital replacement program of $502,000 ($245,000 for buildings, $207,000 for machinery and $50,000 for tools). Net savings are for the year involved only. They do not include cumulative savings from projects completed in earlier years. If the cost of using the old machinery were $230,000 in a year and the new equipment $100,000, the gross savings would be $130,000. When the new machinery is written off at the rate of $50,000 a year, the net savings are $80,000.

Typical projects at Harris-Seybold include machine tool replacements, materials handling modifications, reorganization of the shipping procedures and a new tool crib control system.

Mr. Archer gets his projects from: Department heads who suggest changes; salesmen, business magazines or trade shows that suggest improvements; periodic rough screenings that show some equipment is suspect because of high scrap loss, high maintenance costs, obsolescence or age.

When a project is written up, it is routed from the industrial engineering department to the department head affected, to the division head affected, to the treasurer, to the president, to the board of directors. Some projects need go only as far as the treasurer.

Mr. Archer gets as much comment as possible on the way to the board of directors. He modifies the presentation according to the criticism. It's a rare case when a proposal reaches the board of directors exactly the same as the original suggestion.

As applied to Harris-Seybold, Mr. Archer thinks MAPI results are conservative. MAPI also glosses over the importance of money to back up the program. MAPI says that the ideal program should ignore the tax depreciation reserve left on an old machine suspect for replacement. Ideally, that is correct, but practically one source of money for a replacement program is from tax depreciation credits. Hence the need for more liberal tax depreciation allowances.

Warner & Swasey has been operating under the MAPI program for about four months. To get the program started, Vice President L. D. McDonald found that the big problem was to make it understood by the group of engineers working with it. He solved that matter by getting the engineers to write a manual adapting the MAPI formula to Warner & Swasey circumstances. That forces the people writing the manual to understand it, is a quick way of giving all management not directly concerned with re-equipment the high spots of the program and serves as a training means for new engineers.

The first big MAPI study at Warner & Swasey was the replacement of machines in its milling machine department. The company is spending about $70,000 on five new milling machines to replace six old ones. It estimates the move will net a saving of $7781 per year after recovering equipment cost and interest on money invested.

Warner & Swasey engineers took 60 days to gather the data on the milling machine switch. They started out to consider just one machine, but soon found it better to consider banks of equipment rather than an individual machine because in all but the smallest plants a company's production depends on more than one piece of equipment. Furthermore, when figuring a group of machines, surprising savings may turn up that wouldn't show if just one machine were being considered.

The best thing about a scientific replacement program is this: It's a step toward depreciation and re-equipment reform that you can make by yourself without relying on outside help.

Combination Diplomat-Engineer Needed

A SCIENTIFIC program for equipment replacement can:

1. Save you or any other manufacturers money.

2. Keep you in the first rank technologically.

3. Help you determine when and where to replace by fashioning a measuring stick calibrated in dollars to size up all factors involved in replacement.

A SCIENTIFIC replacement plan is no cure-all, no push-button device to get the right answer. But it is an excellent tool to aid managerial judgment.

SEVEN STRONG REASONS

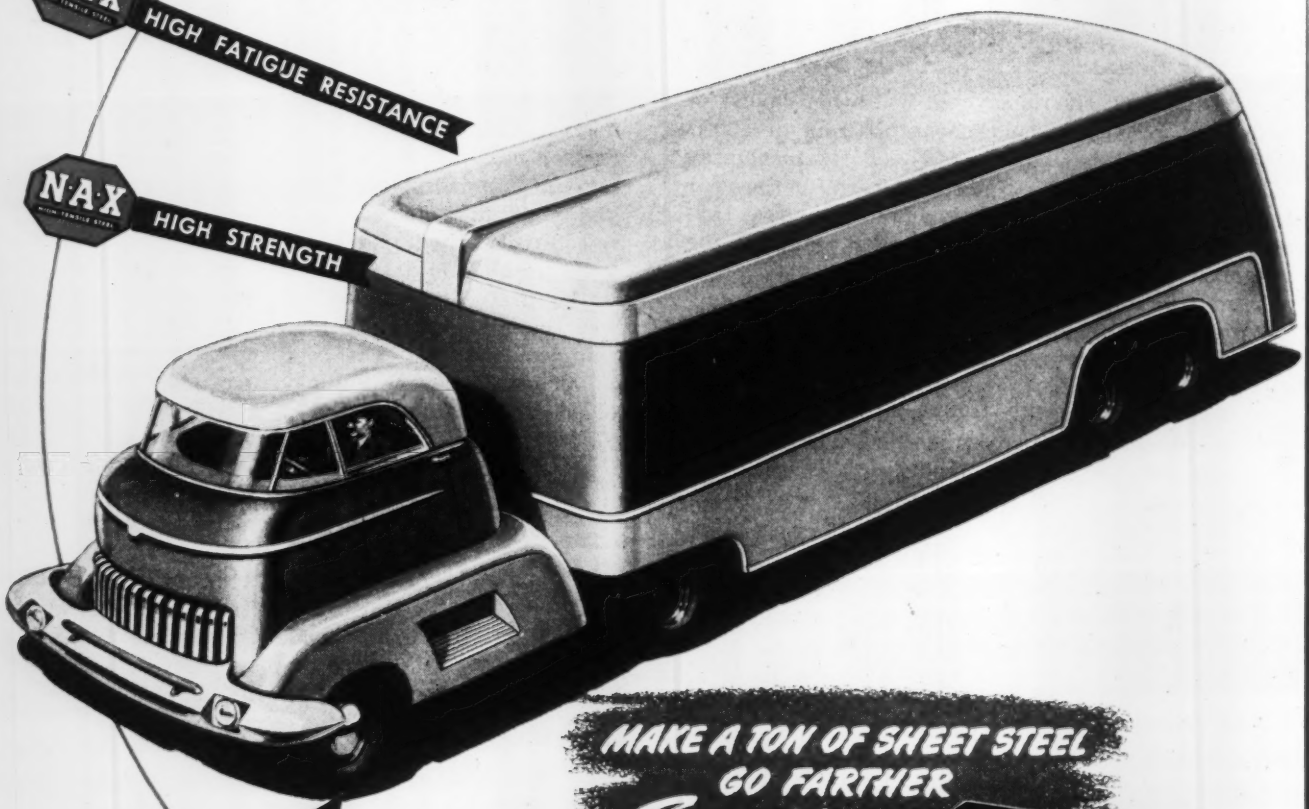
A better steel for the purpose in hand has always found favor with manufacturers of commercial vehicles . . . currently the trend is to N-A-X HIGH-TENSILE steel.

N·A·X GREAT IMPACT TOUGHNESS

N·A·X FINER GRAIN STRUCTURE

N·A·X HIGH FATIGUE RESISTANCE

N·A·X HIGH STRENGTH



N·A·X GOOD FORMABILITY

N·A·X HIGH CORROSION RESISTANCE

N·A·X EXCELLENT WELDABILITY

MAKE A TON OF SHEET STEEL GO FARTHER

Specify—

N·A·X

HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division, Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Manpower, not materials, gives automobile manufacturers the principal concern as they evaluate impact of present and possible future military action on car production

DETROIT

IN EVALUATING the impact of present and possible future military action, together with the armament production necessary to support it, on automobile schedules for the rest of this year and next, it is manpower, not materials, that gives the principal concern.

Best estimates are that 1951 arms programs could not possibly require better than 10 per cent of the nation's steel production, if that much. A 10 per cent slash in auto output from current levels would still leave assembly lines rolling faster than in 1949. However, accelerated conscription of personnel might vacate many key spots, both in engineering and manufacturing, which would be difficult to refill.

Any new large-scale programs for construction of tanks, mobile weapons or other specialized equipment will take six to eight months to tool up and get under way, so material needs will not be pressing until well into next year. Meanwhile, there will be pressure on sources for tools, dies, machinery and related equipment, and any drain on their engineers and skilled workmen could become quite critical.

Plating Materials Scarce

Right now the big headache among auto manufacturers is plating materials, specifically nickel and copper. Since the Korean outbreak, nickel has been under strict allocation, and users are receiving only 65 per cent of their average consumption over the first four months of this year, with hints this may be cut to 50. That is a rough deal, considering that the average automobile has about 3 pounds of nickel in its plated parts. On the basis of 600,000 cars and trucks a month, this means approximately 1.8 million pounds of nickel. Over the past three months output has jumped to an average of 700,000 units monthly, so if one-third of the nickel required for the lower production rate is lopped off, the bite is even worse.

What Happened—Why the hefty cut in nickel allocation? The experts figure it this way. Earlier in the year the nickel companies, committed to government stockpiling of 1 million pounds a month, were going a little easy on this account, with government consent of course, perhaps setting aside only 25-30 per cent of the full stockpiling amount. After all, with the international situation not too crucial, there was not much point stacking piles of nickel all over the country, particularly since all of it came from just across the border in Canada. When the fire exploded in Korea, it is reasoned that the government at once began insisting on the nickel people making up their deficits and meeting full monthly commitments. Result was they now must allocate far beyond the one million pounds a month to build up the stockpiles, and commercial users must suffer.

Just what is to be done with this enormous inventory of government nickel is the question a lot of persons close to the picture are asking. Jet engines are mentioned, but even if they were made of pure nickel, the current production rate of several hundred a month would need only a trifling amount of nickel in comparison to what is available. Alloy steel. Yes, but there again the overall requirements would not tax the supply.

What To Do?—Getting back to automobiles, plating departments are really worried, as are outside electroplaters supplying the industry. The first and most obvious relief might be a reduction in the thickness of nickel on plated parts. This has been running around 0.0015 inch, covered with a flash of copper and a final flash of chrome. General Motors is understood to be studying the possibility of substituting two-thirds of the nickel with copper to leave a combined layer of 0.0015 inch. The trouble is that platers say nickel less than 0.001 means poor corrosion protection, no matter how much copper is plated over it. So it appears a one-third reduction in the nickel thickness is about as far as you can go.

Other sources for nickel? There are some. Last year platers in the U. S. imported roughly 1.3 million pounds from a Norwegian refinery to bolster supplies coming from Canada. Much of this went to the auto industry.

Substitute paint for plate? That was done widely in the final runs of passenger cars before the last war. The cars looked pretty drab but in the rush to grab up what few were available nobody kicked too loudly.

A Way Out—In the event the present nickel pickle is to be of only short duration, pending the reinforcement of government stockpiles, it can be surmounted by resourcefulness and willingness to pay a price, as this incident shows:

Over on Formosa, where Generalissimo Chiang Kai-shek and his Chinese nationalists have holed in with what is left of the government, there were large stores of Chinese coins, at least three denominations of which were minted from pure nickel (in the U. S., incidentially, from metal purchased here). They cost the Chinese roughly 80 cents a pound. Apparently their intelligence is good and they learned of the nickel shortage in this country. So an enterprising broker on the island offered to pay the generalissimo $1 a pound (American dollars) for some of his stored coins. The deal was consummated and the broker in turn sold them to a West Coast broker for $1.20 a pound (American dollars). The next transfer was to General Motors at $1.45 a pound, the upshot being that GM found itself with 10,000 pounds of

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	732,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	751,300*	604,351
August		678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
July 29	191,978	138,727
Aug. 5	175,572	145,596
Aug. 12	186,750	146,317
Aug. 19	190,000	149,359

Estimates by Ward's Automotive Reports

* Preliminary.

Chinese coins which were melted down into anode bars for plating tanks. Chiang Kai-shek had himself $10,000 American dollars, one broker $2000, another broker $2500, and GM had some nickel, even if at more than double the 63-cent per pound price of nickel anodes from regular sources.

Trifling—The amount of metal is trifling. It might meet the nickel requirements for plating on half a day's production of Chevrolet passenger cars. At the same time it typifies the auto industry's ingenuity in literally combing the world for materials in short supply. Who knows, the front bumper on your new car might be covered with Chinese coins.

Another Headache for Platers

Chromic acid for plating is getting to be just about as critical as nickel, but for an entirely different reason. Prolonged strikes in four leading alkali plants have nearly closed the door on chromic acid, and suppliers are rationing customers on a basis of something like 25 per cent of normal requirements. Chiang Kai-shek probably cannot help that one any.

As if this were not enough, the alkali strike spread to the coke manufacturing division of one company, now idle since Aug. 1, and last week small foundries in this area were planning to close down for lack of coke. Negotiations for settlement of the labor trouble reportedly were at a standstill. Larger captive iron foundries of the auto industry were in somewhat better shape, although they have no large inventory of fuel on the ground.

GM Expands in Canada

Major expansions by three Canadian General Motors subsidiaries are in the works, including the resumption of Buick production in the Dominion with the introduction of 1951 models.

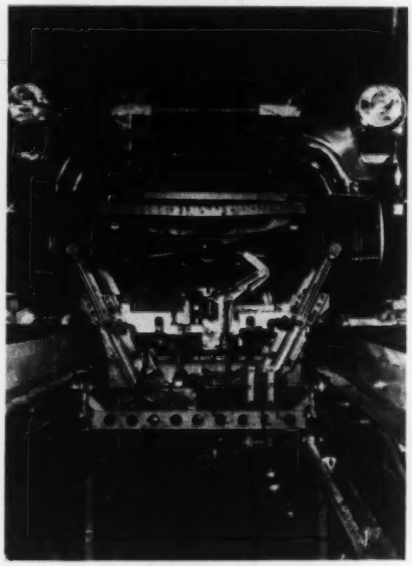
Frigidaire Products of Canada Ltd., now operating a plant at Leaside, Ont., will build a new 50,000-square foot plant on a 70-acre tract in Scarboro township adjacent to Toronto. McKinnon Industries Ltd., at St. Catharines, Ont., will boost its production of automotive parts and accessories by the addition of a new plant providing about 135,000 square feet. Six new buildings, some now under construction and others to be started soon, will be used by General Motors of Canada Ltd., Oshawa, Ont., to handle the incidence of Buick production, the first since 1939. Bodies and a substantial number of components for Buick will be manufactured in their entirety in Canada.

Details of the GM Canadian expansion were revealed at the formal opening of the corporation's new diesel locomotive plant at London, Ont., Aug. 11. Ground for this 210-acre plant was broken last September and production started June 1. A juicy order backlog for diesel-electric passenger and freight locomotives should keep this facility busy for a long period.

The overall program represents one way to overcome restrictions on imports of American goods into the Dominion. C. E. Wilson, GM president, said the move was necessary to meet increased customer demands resulting from the growth of our neighbor to the north, as well as intensified development of natural resources, increased population and rising standard of living.

Nonstop Wheel Alignment

Wheel alignment while cars are in motion on the final assembly line is achieved by Oldsmobile in Lansing,



FRONT WHEEL TOE-IN
. . . two operators, one control

Mich., through use of a progressive toe-in wheel alignment machine.

The unit enables two operators to set front wheel toe-in while the car is moving down the pallet-type conveyor line. The machine moves with the car 12 feet down the conveyor line through an engaging arm which attaches to the car. It is completely automatic, with a single control.

Two gage arms on each side advance upward and bear against front tires at two points on the inner side tire wall at both front and rear. The operator reads a gage to show him the amount of toe-in or toe-out registered from the tires. He arranges the tie-rod adjustment to the proper setting to within plus or minus 1/16-inch by operating an air-powered clamping tool which clamps the tie-rod adjusting sleeves so as to mesh the threads between the rod and the sleeve.

Rotating plates, normally positioned outside the conveyor pallets, are actuated by a cam on the conveyor. A hydraulic cylinder forces the plates across the conveyor pallet. The front tires are rotated one-half revolution by the stationary plates to relieve the binding forces between the tire and conveyor. This eliminates any error which the binding force might cause on the steering linkage.

The alignment machine automatically centers itself to the exact center of the car, enabling it to give an accurate spoke setting to the steering wheel, so that the horn ring and spokes are in a normal position for driving. Few drivers realize the importance of correct wheel toe-in maintaining driving stability and reducing tire wear.

Buick V-8 Engine Coming

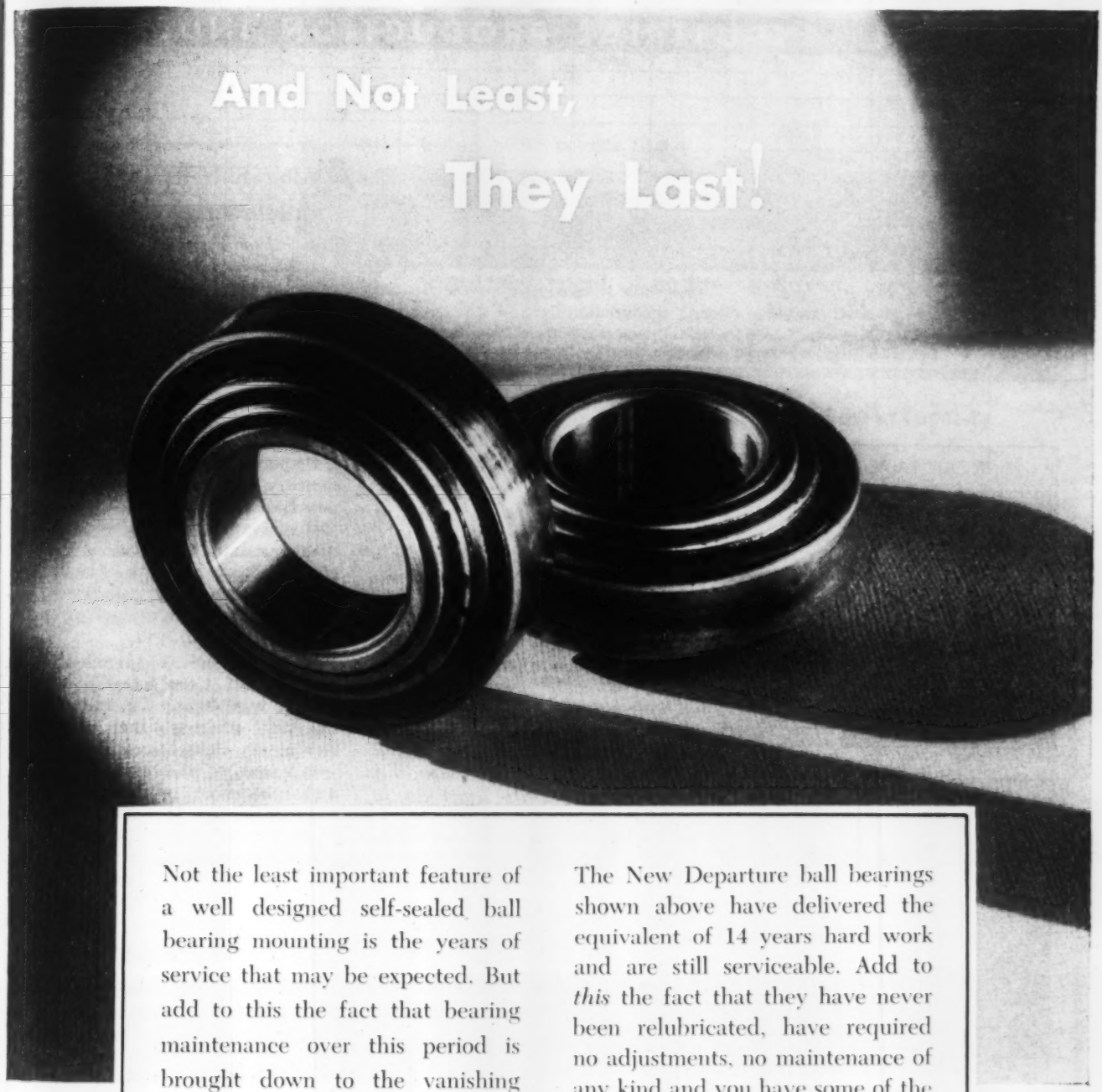
Reams of blueprints detailing equipment requirements for the new Buick V-8 engine plant are being released for quotations and they involve millions of dollars worth of tools. A few, including gear finishers, already have been placed and the rest will follow over the next few months. Once the equipment has been booked, plans will go forward for a new building to house the operation at Flint.

By next spring, the project should be fairly well along and engines will be ready for the 1952 models. It is expected the new Buick power plant will pattern the overhead valve type of V-8s which Oldsmobile and Cadillac now have in production, with perhaps a slight increase in compression ratio over these designs.

Nash Signs Italian Designer

Foreign touch to the design of future Nash automobiles will be supplied by Pinin Farina, Italian designer and body builder, recently signed as consultant to Nash. He is credited with creation of some of the world's most exclusive special cars, and has been at work on new Nash designs since May, formal announcement having been delayed pending his arrival in the U. S.

Farina has a custom car body plant at Turin, Italy, and he has fathered many "specials" fitted to Alfa Romeo, Fiat, Cisitalia, Bentley, Lancia, Maserati, Bristol, Hispano-Suiza and other European chassis. Output at the Turin plant runs about 100 a month.



Not the least important feature of a well designed self-sealed ball bearing mounting is the years of service that may be expected. But add to this the fact that bearing maintenance over this period is brought down to the vanishing point and you have some of the reasons for the increasing trend to ball bearings.

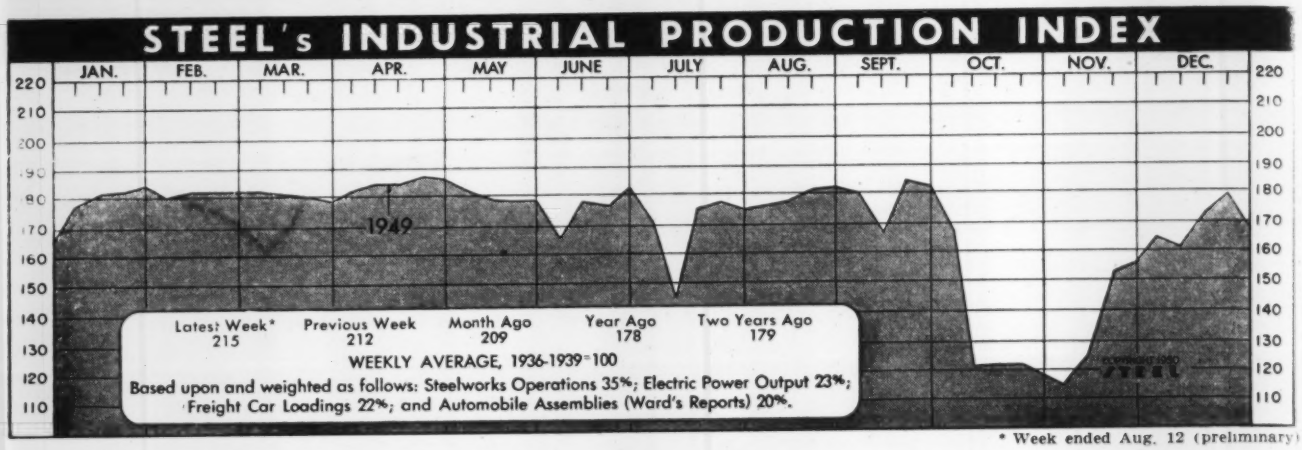
The New Departure ball bearings shown above have delivered the equivalent of 14 years hard work and are still serviceable. Add to *this* the fact that they have never been relubricated, have required no adjustments, no maintenance of any kind and you have some of the reasons why New Departure has to date produced over 159 million self-sealed bearings.

Remember — ball bearings take radial loads and thrust from any direction with greatest efficiency.

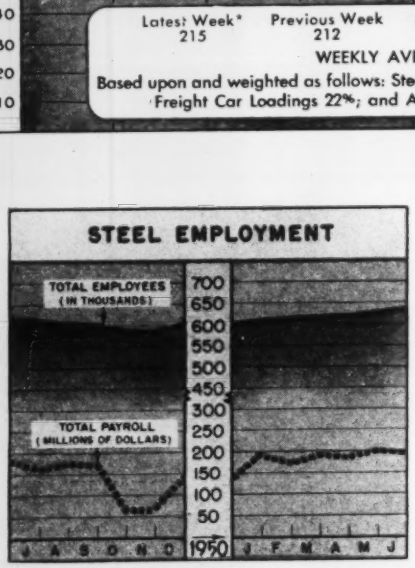
Nothing Rolls Like a Ball

NEW DEPARTURE BALL BEARINGS

NEW DEPARTURE · Division of GENERAL MOTORS CORPORATION · BRISTOL, CONNECTICUT BRANCHES IN ALL PRINCIPAL CITIES


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1949
Latest Week* 215
Previous Week 212
Month Ago 209
Year Ago 178
Two Years Ago 179
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

* Week ended Aug. 12 (preliminary)

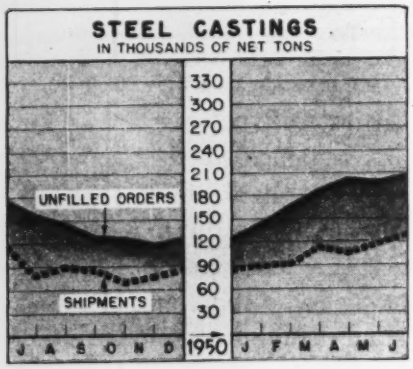

STEEL EMPLOYMENT
TOTAL EMPLOYEES (IN THOUSANDS)
TOTAL PAYROLL (MILLIONS OF DOLLARS)
700 650 600 550 500 450 300 250 200 150 100 50
J A S O N D 1950 J F M A M J

Charts—Copyright 1950, STEEL

Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1950	1949	1950	1949
Jan.	609	650	$189.3	$202.1
Feb.	613	653	174.7	189.8
Mar.	616	652	190.0	207.2
Apr.	621	647	186.2	191.9
May	628	637	199.9	188.4
June	636	625	195.3	181.8
July		610		160.3
Aug.		603		175.6
Sept.		600		173.5
*Oct.		584		63.1
*Nov.		584		63.1
Dec.		602		136.9

Monthly average. * Averages taken from single figure for the two strike affected months. American Iron & Steel Institute.

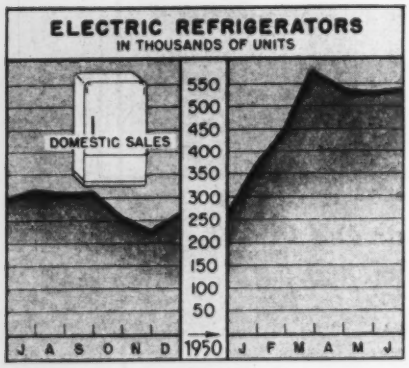

STEEL CASTINGS
IN THOUSANDS OF NET TONS
UNFILLED ORDERS
SHIPMENTS
330 300 270 240 210 180 150 120 90 60 30
J A S O N D 1950 J F M A M J

Steel Castings

In Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	88.8	140.6	142.5	338.9
Feb.	91.8	135.0	165.2	320.2
Mar.	111.8	138.9	185.6	284.8
Apr.	107.0	120.0	201.6	250.5
May	117.9	106.2	198.0	191.5
June	130.5	116.1	206.8	173.2
July		78.7		155.5
Aug.		90.0		143.6
Sept.		86.5		127.7
Oct.		70.7		124.8
Nov.		76.4		117.9
Dec.		84.5		122.9

*For sale. Bureau of the Census


ELECTRIC REFRIGERATORS
IN THOUSANDS OF UNITS
DOMESTIC SALES
550 500 450 400 350 300 250 200 150 100 50
J A S O N D 1950 J F M A M J

Electric Refrigerators

Domestic Sales—Units

	1950	1949	1948
Jan.	364,002	380,853	272,121
Feb.	450,751	337,424	281,580
Mar.	572,691	369,216	338,109
Apr.	531,498	324,370	330,720
May	528,506	330,753	317,763
June	534,489	296,199	373,115
July		315,444	351,094
Aug.		307,622	281,345
Sept.		309,429	344,260
Oct.		252,580	380,854
Nov.		221,221	374,470
Dec.		259,158	330,660

National Electrical Mfrs. Assoc.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction July24	Gray Iron Cast....Aug.7	Ranges, Elec. July31
Durable Goods July24	Indus. Prod. Aug.7	Ranges, Gas. July10
Fab. Struc. Steel ..Aug.7	Machine Tools July31	Steel Forgings Aug.7
Foundry Equip. ..Aug.7	Malleable Cast. July24	Steel Shipments ...July24
Freight Cars Aug.14	Price Indexes July31	Trucks, Elec. Ind...Jan.2
Furnaces, W. Air ..Aug.14	Pump Orders Aug.14	Vacuum Cleaners ..July31
Furnaces, Indus. ..Aug.14	Purchasing Power..July31	Washers Aug.14
Gear Sales Aug.7	Radio, TV Aug.14	Water Heaters July10

Steel Employment Rising

Employment in the iron and steel industry in June, totaling 635,900 persons, was the highest since May, 1949, says the American Iron and Steel Institute. That was an increase of 7700 compared with May. It was the largest monthly gain since employment began to recover after the steel strike late in 1949.

Owing to the shorter month, the total payroll of the industry at $195,332,000 was slightly less than in May but was otherwise the largest for any month since March, 1949.

Payments to wage earners averaged $1.714 an hour in June, compared with $1.722 in May and $1.684 in June of last year. Wage earners worked an average of 39.3 hours a week in June, compared with 39.7 in May and 37.6 hours in June, 1949.

Steel Castings Trend Upward

Improvement in foundry operations even before the shooting started in Korea is reflected in the Census Bureau's report on steel castings output in June. Shipments that month were 11 per cent above May and 12 per cent above June, 1949, on an average working day basis.

Tonnagewise the June total was 130,491 tons, the highest figures in more than a year. In May it was 117,944 and in June a year ago shipments were 116,052 tons.

Orders were placed faster than the foundries were able to produce and the backlog rose to 206,799 tons, up 9000 tons over a month earlier. Backlog total consists only of tonnage for sale to the trade and does not include those orders for own use.

With a sizable proportion of steel castings going for railroad use there will be considerable improvement in steel foundry operations over the coming months. July's shipments figures will show a drop because of vacations but succeeding months' totals will be higher.

The Business Trend

Aside from the pinch for metals being more severe there is still little effect of rearmament on civilian production but it's certain metalworking will be hit

BIGGEST difference between civilian production now and at the time aggression lit a torch in Korea is that the anguished cries of executives who are not getting all the steel and other metals they need are louder and more heart rending. Everyone expects a cutback in civilian goods. How much and when is still to be decided. Whether automobile outturn will be rolled back 10 per cent as has been predicted or whether that is just a nice round figure is only one of many questions to be answered.

As the accent swings to military production some of our economic gages will be in a for a little overhaul. Since our economy is directed toward producing civilian goods, economic barometers are naturally such that they reflect peacetime output. Production of civilian items made from metal is certain to suffer in the months to come and unless some adjustment is made in economic indicators they will not cast a true reflection of output rates.

In the week ended Aug. 12 STEEL's industrial production index moved up 3 points to a preliminary 215 per cent of the 1936-1939 average. While none of the four components that make up the index were at record levels they all were high. Carloadings have made the biggest jump in recent weeks but they are still farthest away from postwar highs.

More Autos . . .

Manufacturers and the public are watching automotive production carefully though for different reasons. When passenger car output drops it will cause some readjustment in production for many suppliers to the industry. John Public is worried whether that automobile he just decided he must have will come through before civilian passenger car output is curtailed. In the week ended Aug. 12, passenger car and truck outturn climbed to 186,750 from 175,572 a week earlier. A problem facing the industry right now is tooling for 1952 models. Changes were to have been rather extensive in 1952 but preparation for war means a shortage of skilled help for readying the programs and special purpose machinery may be difficult to get. These worries are not premature as they seem at first but are the result of the long lead time required to get new models ready.

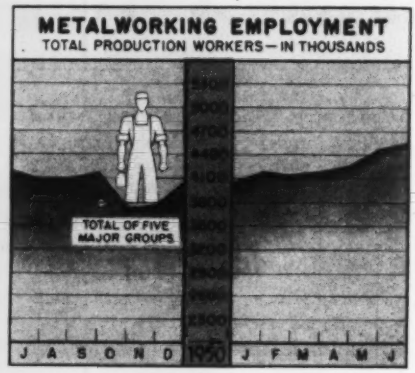
Steelmaking at Capacity . . .

Operations in the nation's steel mills edged up slightly last week from 99.5 per cent of capacity in the week ended Aug. 12. The operating rate is now being calculated on the basis of the revised capacity effective July 1. The new weekly capacity is 1,926,803 net tons, 83,000 tons more than it was in 1949.

Unemployment Vanishing . . .

New unemployment among workers covered by state unemployment insurance laws dropped to late 1948 levels during the week ended July 29, the Labor Department reports. Initial claims filed that week were down to

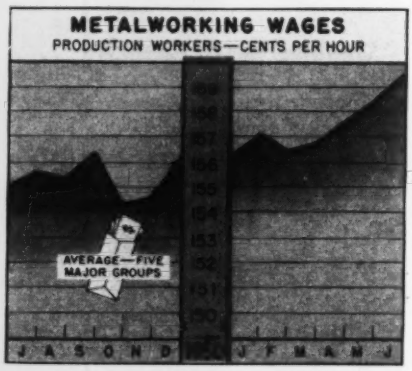
	LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
Steel Ingot Output (per cent of capacity)†	99.5	99.5	96.0	82.5
Electric Power Distributed (million kilowatt hours)	6,253	6,247	6,006	5,530
Bituminous Coal Production (daily av.—1000 tons)	1,760	1,789	250	1,254
Petroleum Production (daily av.—1000 bbl)	5,675	5,640	5,495	4,774
Construction Volume (ENR—Unit $1,000,000)	$164.0	$209.3	$365.0	$257.3
Automobile and Truck Output (Ward's—number units)	186,750	175,572	194,073	144,078
*Dates on request. † 1950 weekly capacity is 1,926,803 net tons. 1949 weekly capacity was 1,843,516 net tons.				
Freight Car Loadings (unit—1000 cars)	840†	837	789	728
Business Failures (Dun & Bradstreet, number)	194	168	187	176
Money in Circulation (in millions of dollars)‡	$27,015	$27,000	$27,169	$27,409
Department Store Sales (changes from like wk. a yr. ago)‡	+29%	+42%	+8%	−12%
† Preliminary. ‡ Federal Reserve Board.				
Bank Clearings (Dun & Bradstreet—millions)	$13,677	$15,269	$14,372	$11,381
Federal Gross Debt (billions)	$257.4	$257.6	$257.2	$254.5
Bond Volume, NYSE (millions)	$19.3	$20.7	$29.9	$15.7
Stocks Sales, NYSE (thousands of shares)	9,335	8,803	12,961	5,876
Loans and Investments (billions)†	$67.8	$68.0	$67.7	$63.8
United States Gov't Obligations Held (millions)†	$35,496	$35,727	$36,152	$35,773
† Member banks, Federal Reserve System.				
STEEL's Weighted Finished Steel Price Index††	156.99	156.69	156.69	152.52
STEEL's Nonferrous Metal Price Index‡	197.0	194.9	190.1	180.0
All Commodities†	165.5	165.3	161.9	153.3
Metals and Metal Products†	173.9	173.9	173.1	168.2
† Bureau of Labor Statistics Index, 1926=100. ‡ 1936-1939=100. †† 1935-1939=100.				



Metalworking Employment

1949	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
June	971	679	977	518	995
July	934	671	939	505	1,014
Aug.	932	688	927	507	998
Sept.	938	708	935	531	1,017
Oct.	559	677	922	548	986
Nov.	737	666	908	546	898
Dec.	955	988	929	558	896
1950					
Jan.	963	693	936	561	978
Feb.	977	699	959	572	872
Mar.	982	709	981	580	879
Apr.	1,007	721	1,003	596	9,000
May	1,025	741	1,021	606	1,041
June	1,039	764	1,032	622	1,073

Bureau of Labor Statistics

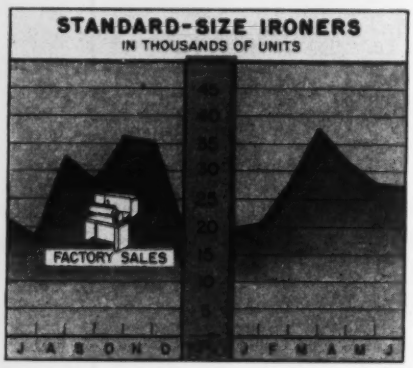


Metalworking Hourly Wages

Production Workers—Five Major Groups

1949	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
June	158.1	146.4	152.9	144.0	165.8
July	159.1	146.6	153.0	144.7	166.1
Aug.	158.1	146.8	153.1	145.1	166.0
Sept.	160.7	147.4	153.8	144.7	167.4
Oct.	155.6	145.9	153.6	143.5	165.6
Nov.	158.0	145.1	153.8	143.5	166.2
Dec.	159.7	147.2	154.3	144.6	168.4
1950					
Jan.	161.5	148.8	154.7	144.3	168.2
Feb.	160.2	148.1	155.2	144.5	167.7
Mar.	160.4	148.0	156.0	144.3	167.8
Apr.	161.0	148.7	156.9	144.6	170.4
May	162.0	149.3	157.7	145.3	169.8
June	163.7	150.1	158.2	145.1	171.7

Bureau of Labor Statistics



Standard-Size Ironers

Factory Sales—Units

	1950	1949	1948
Jan.	20,300	28,300	40,192
Feb.	27,600	28,400	51,651
Mar.	37,800	23,800	53,686
Apr.	31,600	18,100	47,319
May	27,400	19,500	44,954
June	27,100	21,100	32,767
July	.....	17,700	26,679
Aug.	.....	32,300	35,203
Sept.	.....	27,700	37,308
Oct.	.....	36,045	38,517
Nov.	.....	35,000	42,000
Dec.	.....	19,400	26,000
Totals		307,345	476,860

American Washer & Ironer Mfrs. Assoc.

Charts—Copyright, 1950, STEEL

170,666, lowest number since October, 1948. Level of continued claims, which represent the number of persons filing claims who have been unemployed for a full week, also declined substantially. They numbered 1,337,046, lowest total reported this year. Not reported by any government agency or backed up by figures are stories of labor piracy. Perhaps piracy is a rather strong word but certain forms of skilled help have been offered interesting inducements by firms in other localities.

Engineering Awards Skid . . .

Engineering awards in August are down considerably from the records set in July. Part of the decline can be traced to hesitation in placing contracts for which material may be hard if not impossible to get. In the week ended Aug. 10 awards were down to $164 million from $209 million a week earlier. Both of the weeks were below the $225 million weekly average thus far this year. Total volume for the first 32 weeks this year is $7213 million, 43 per cent above a year ago. Private construction accounts for $4137 million and is 76 per cent higher than in the corresponding 1949 period.

Inventories Higher . . .

Business inventories at the end of June were estimated at $55.3 billion by the Commerce Department. After allowance for seasonal variations the book value of inventories rose about $900 million in June to about the same level as a year ago.

Has Korea Hit You?

Chicago firms report output and price increases, but delivery delays because of the war

WHAT'S the Korean war done to your business?

Companies reporting to the Purchasing Agents Association of Chicago on that question say production has increased, prices are up and vendor deliveries are slower because of the war.

Going Up—Some 51 per cent of the companies reported that production is increasing. About 9 per cent had lower output. Business conditions continue excellent for the overwhelming majority of the 100 companies participating in the survey. Order backlogs are climbing fast.

The upward spiral of prices is unabated; 85 per cent of the reporting companies are paying more for the principal items they buy. In August, 1948, 88 per cent of the companies reported paying higher prices. That month is still the peak for price activity. Some 66 per cent of the companies reporting hiked their own prices in July.

Slowing Up—Nearly 90 per cent of the companies report that deliveries from vendors are slower because of the war. That factor probably accounts for the production declines shown by a handful of participants in the survey. The inventory position of the 100 companies is good despite the difficulty with vendors; 85 per cent reported the same or larger inventories. The trend in buying continues toward 90 days or longer.

Employment is high, with all but 2 per cent of the companies reporting the same number or more workers.

Your Credit's Good

Credit difficulties will not be a monkey wrench in the wheels of plants working on defense orders, says Henry H. Heimann, executive manager of the National Association of Credit Men, New York.

"Reasonable debt incurment to carry on the war effort will not be frowned upon, particularly if it contributes to defense production. Every attempt to prevent production delays due to credit problems will be made. Credit men know the importance of credit in a war effort and they intend never to lose sight of the fact that credit policies must be adjusted in a crisis," Mr. Heimann comments. This doesn't mean a wholesale abandonment of judiciousness, for "quite prop-

erly the wise credit manager," Mr. Heimann explains, "will discourage inventory speculation, heavy overhead cost increases and unwarranted debt."

Even smaller firms, though lacking in some of the essentials for normal credit qualification, will find credit executives ready to supply the deficiency with advice on capital sources and wise counsel on management problems, he adds.

Of course a plant must possess reasonable capital and capacity to ensure faith in its ability to carry through munitions production, Mr. Heimann points out.

Demand Up for Wiring Systems

Demand for components used in remote-control wiring systems increased twelve-fold in the last six weeks, says C. C. Walker, vice president and general manager of General Electric Co.'s Construction Materials Departments, Bridgeport, Conn.

Part of the gain is ascribed to use of this type wiring by big builders of residential housing projects. The remote-control system makes it possible to have any number of controls for certain lights and utility outlets by use of low-voltage and lightweight wiring.

Remington Rand Plants Busy

Production and employment at the Tonawanda and North Tonawanda, N. Y., plants of Remington Rand Inc. are heading toward new peaks. Incoming orders are mounting steadily. These are from regular customers and do not reflect direct government buying.

Appliance Output Pushed

Westinghouse Electric Corp.'s Appliance Division plant at Mansfield, O., is working six days a week on refrigerators, electric ranges and automatic washers. Lines assembling other appliances are on a five-day week.

The Mansfield plant has a record force of 8000, 500 more than in July. The Westinghouse appliance plant at East Springfield, Mass., has a near-record employment of 4500.

Cleveland Employment Up

Industrial employment in Greater Cleveland reached 201,000 at the end of July, an increase of 11,000 over July a year ago, says the Cleveland Chamber of Commerce.

The July employment is the highest since February, 1949, but below the level of 210,000 to 220,000 that persisted during much of 1947-48.

Truck Output Rolls, Spurred by Korean War

THE KOREAN war is speeding up truck assembly lines in the U. S. and Canada.

Truck production now is hovering around 30,000 a week, says *Ward's Automotive Reports*. An alltime record output of 1.4 million for 1950 is possible, slightly exceeding the peak production in 1948 (see the chart). All weight groups are sharing in the demand upswing. Military truck orders are increasing at Willys-Overland Motors Inc., Reo Motors Inc. and other builders, but thus far most of the heavier buying comes from civilian users who are getting their vehicles while the getting is good.

Gilding the Lily—Even before the Korean situation developed, truck makers were enjoying a mild boomlet. For the first seven months of this year, 834,991 trucks were assembled, compared with 781,629 in the same period last year. New commercial car registrations totaled 510,428 for the first six months of this year, compared with 465,581 in the first half of 1949.

High truck production is likely to continue for some time because: 1. Military ordering is expected to increase soon; 2. the government will probably encourage commercial car output as an aid to industrial mobilization; and 3. civilian truck buyers are in good shape financially to buy the vehicles. They will not be affected to the extent automobile buyers will be when and if tighter credit restrictions are inaugurated.

Profit by Error—The government is not likely to halt civilian truck output even in case of total war. It tried that in 1942, but two months later had to rescind its order and permit limited civilian assemblies.

Truck-trailer production is more than matching the climb in truck assemblies. In the first five months of this year, the Commerce Department's Census Bureau figures show truck-trailer output at 20,233 units.

Willys Boosts Output

Willys-Overland Motors Inc., Toledo, O., is increasing production of its four-wheel drive station wagon because of heavier demand from both domestic and export civilian buyers. The vehicle was originally developed for use by the Army map service.

Western Freight Cars Tighten

Freight car supplies for western manufacturers, already tight before the Korean war, have reached a critical stage for many shippers in the last week or two.

The war not only has diverted many cars for military shipments, but the increased demand from civilian buyers has also heightened the transportation squeeze. At the same time, a tightness in water shipping space has thrown a heavier burden on the overtaxed railroads.

Although rail car shortages are spotty, a large number of fabricators already are suffering delayed shipments and those who've had little trouble so far anticipate difficulties soon.

One large western steel fabricator's normal needs for freight cars amount to about 24 daily. It has been getting only about 15 daily during the last month, and on one day it received only one car.

Truck Makers Climb Toward Peak Year

(Units assembled in U.S. and Canada)

1939	1941	1947	1948	1949	1950
757,553	1,270,647	1,329,290	1,369,472	1,230,312	1,400,000*

Source: Ward's Automotive Reports. * Estimated

Men of Industry

GEORGE H. KINZEL
sales mgr., O. Z. Electrical Mfg.

Appointment of **George H. Kinzel** as sales manager is announced by **O. Z. Electrical Mfg. Co.**, Brooklyn, N. Y. Mr. Kinzel will devote much of his time in his new capacity to traveling with wholesalers' representatives to aid them in building up sales volume in their territories. He was formerly sales manager of Bergen Wire & Rope Co. and served in a similar capacity for Engineered Products Division, Air Associates Inc. **Roy Comstock** will serve as electrical engineer in charge of contact work for the company. Mr. Comstock was formerly associated with Cutler-Hammer Inc. in a sales and engineering capacity.

Metals Disintegrating Co. Inc., Elizabeth, N. J., elected **Julius F. Sachse** as vice president and **Mary Sohayda** as secretary. These elections were made by the directors of the company to fill the vacancy created by the death of **Furman C. Arthur.**

Glenn F. Ihrig was named assistant sales manager, **Wellman Bronze & Aluminum Co.**, Cleveland. He has been associated with the company for over seven years, serving as sales representative in Indiana, Ohio, Pennsylvania and New York.

Oster Mfg. Co., Cleveland, elected **T. S. Bonnema** a director. Since 1944 he has been vice president in charge of production.

Robert E. LaBonde was appointed advertising and export manager, **R. K. LeBlond Machine Tool Co.**, Cincinnati. He succeeds **B. N. Brockman Jr.**, who joined Oliver H. Van Horn Co., Houston, as sales manager.

RONALD K. EVANS
General Motors exec. vice president

Ronald K. Evans was elected an executive vice president of **General Motors Corp.**, Detroit. He was group executive in charge of the general engine divisions and a vice president prior to this promotion. **Cyrus R. Osborn**, vice president of the corporation and general manager of the Electro-Motive Division, was appointed group executive to succeed Mr. Evans. **B. A. Dollens** was elected a vice president of the corporation and succeeds Mr. Osborn as general manager of Electro-Motive Division. All three GM executives have been with the company at least 25 years.

Jacob Joachimi was appointed director of manufacturing for **A. E. Bausenbach Inc.**, Buffalo, producer of metal containers. He was a former superintendent of manufacturing and tooling for Bell Aircraft Corp.

Perrepont B. Noyes has resigned as president of **Oneida Ltd., Oneida,** N. Y., and is succeeded by **Miles E. Robertson** who continues as general manager.

T. J. George was appointed Philadelphia district sales manager, **Sawhill Mfg. Co.**, Sharon, Pa., and **D. M. Middleton** will represent the company in western Pennsylvania, West Virginia and Ohio.

Blaine F. Fairless was promoted to sales manager, **Steel City Electric Co.**, Pittsburgh.

Raymond A. Sternthall succeeds the late **T. Franklin Day** as branch manager of the Los Angeles office and warehouse of **Chase Brass & Copper Co.** He joined Chase in 1936.

CHESTER M. ADAMS
Crobalt V. P.—production & research

Crobalt Inc., Ann Arbor, Mich., appointed **Chester M. Adams** to the post of vice president in charge of production and research. Mr. Adams is responsible in his new position for the manufacture of Crobalt cutting tools and development of cast alloys for metalworking and other industrial applications. His previous experience includes 14 years as foundry superintendent at Haynes Stellite Co., and as general manager of Lescalloy Division, Latrobe Electric Steel Co.

Tempil Corp., New York, appointed **Arthur B. Tesmen** as sales engineer He formerly was with North American Philips Co. Inc. in charge of sales-service, promotion and development of its contact electrodes and other welding products. Prior to that he was with Crucible Steel Co. of America.

Solar Steel Corp. appointed **Walter F. Mills** sales manager of its Edgar T. Ward Cincinnati division, **Harry D. Curtis** sales manager, Detroit division, and **Clayton Scholes** sales manager, Cleveland division. Both Mr. Mills and Mr. Scholes had served with Ohio Stainless & Commercial Steel Co. Mr. Curtis spent 11 years in the steel business in Detroit and Cleveland, of which 8½ years were with Edgar T. Ward's Sons Co. previous to its acquisition by Solar Steel.

F. W. Niggemyer was named sales manager of **McDowell Co. Inc.**, Cleveland.

La Salle Steel Co., Hammond, Ind., appointed **M. G. Sladek** district sales supervisor in charge of accounts in

ONE OIL DOES WORK OF TWO

Dual-Purpose Sunicut Replaces Two Former Oils; Dilution Ends; Finishes Improve; Tool Life Lengthens

When one oil does work formerly requiring two . . . and with marked superiority . . . it doesn't make good sense to keep on buying two.

That is precisely why a prominent ball bearing manufacturer changed to Sunicut. He had been using one oil for lubricating his automatics, and another for cutting, but without complete satisfaction. The lube oil kept diluting the cutting oil by leaking into it. As a result, he got poor finishes and tool life was short. A Sun representative, called in to study the situation, advised using a dual-purpose grade of Sunicut. Adoption of his recommendation solved the problem.

For three years now, Sunicut has been used by the entire automatic department with complete satisfaction. A year ago a switch was made to the *new* Sunicut with Petrofac, Sun's revolutionary all petroleum additive, and even better performance has resulted.

The new Sunicut grades, transparent and non-emulsifying, have been thoroughly "Job Proved." Excellent results are being obtained on automatics machining all types of steel and brass at all practical feeds and speeds. For further information, call or write your nearest Sun Office.

SUN OIL COMPANY · *Philadelphia 3, Pa.*
In Canada: Sun Oil Company, Ltd.
Toronto and Montreal

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO®

Minnesota, Iowa, Wisconsin and most of Illinois and Ohio; and **Paul L. Bisdorf** to its sales engineering staff.

Mathias A. Klein was elected president and treasurer, **Mathias Klein & Sons,** Chicago, to succeed his brother, the late **Joseph A. Klein Jr.**

C. O. Burgess, technical director, Gray Iron Founders' Society Inc., Cleveland, was appointed vice chairman of Committee A-3 on Cast Iron, **American Society for Testing Materials.**

Hunt-Spiller Mfg. Corp., Boston, producer of iron and steel castings, placed **John P. Mullen** in charge of public relations, advertising and sales promotion.

Donald W. Milestone was appointed export manager, **Perfection Stove Co.,** Cleveland. He replaces **L. B. Tuttle,** retired.

Newly named sales representatives to the West Coast offices of **Allis-Chalmers Mfg. Co.** are **Edward E. Wilson** and **Ronald D. Brown,** Portland, Oreg., district office; **David H. Holmes,** Seattle district office; and **James V. Miller,** Spokane, Wash., district office.

John B. Powell was appointed manager, engineering division, apparatus department of **General Electric Co.'s** New England district. He succeeds **George H. Jump,** appointed engineering consultant for the district. Mr. Powell will be located in Boston. **J. David Wright** was appointed assistant manager, industry divisions, Schenectady, N. Y., and is succeeded by **F. M. Roberts** as manager, industrial engineering divisions. **Leonid A. Umansky** assumes the post of manager of engineering of these divisions. **Paul R. Hartig** was named manager, transformer plant, Oakland, Calif. **E. G. Dudley** and **Louis F. Rodewig** were appointed manager and assistant manager, respectively, of the industrial division of the apparatus department, New York district.

E. H. Ulm, formerly sales engineer, electronics division, **Sylvania Electric Products Inc.,** New York, was appointed merchandising manager.

Raymond H. Hartigan was appointed manager of the laboratory section, central research department, **Koppers Co. Inc.,** Pittsburgh. **Gordon Black** was made assistant manager, development section, and **Peter W. Sherwood** as manager, engineering branch of the development section of the research department.

Carboline Co., St. Louis, appointed **R. A. Dittbrenner** as its eastern representative. He also will handle advertising and sales promotion for Carboline on its line of thermosetting and thermoplastic coatings and linings for erosion and corrosion service.

Roger E. Mitchell, assistant general master mechanic, **Buick Motor Division,** Flint, Mich., General Motors Corp., was promoted to general master mechanic. A veteran of 35 years at Buick, he succeeds **Fred C. Pyper,** retired.

Douglas A. Kuhna was appointed chief engineer, **J. N. Fauver Co. Inc.,** Detroit.

John R. O'Connor was named manager of the recently opened district sales office in Cincinnati of **Graver Tank & Mfg. Co. Inc.,** East Chicago, Ind., fabricator and erector of steel and alloy plate for the petroleum and process industries.

David R. Meslang was appointed manager, Seattle branch, **Crucible Steel Co. of America.** He became associated with Crucible in 1935 at the San Francisco branch.

Bob R. Kozicki was promoted to sales manager, **International Forge Co.,** Chicago, and **Fred R. Sadewic** was named plant manager.

Ford Motor Co., Dearborn, Mich., announces creation of a Defense Production Division and appointment of **Richard E. Krafve** as its general manager. The new division will coordinate all defense and mobilization planning for Ford and conduct negotiations between the company and defense agencies. Mr. Krafve was assistant to the vice president-manufacturing for the last two years developing the company's production organization, including expansion and decentralization of manufacturing operations. **Robert E. Busey** was named chief engineer of the new division in charge of design and product engineering. He joined Ford International as chief engineer in March, 1949, after serving as chief engineer at Willys-Overland Motors Inc. and executive engineer at White Motor Co.

Arthur J. Kizaur was named vice president and chief design engineer, and **James S. Thelen,** vice president and factory manager, **General Electric X-Ray Corp.,** Milwaukee.

Nickel Cadmium Battery Corp., New York, appointed **J. F. Collins** as New England sales representative, with headquarters in Boston.

William M. Fiorito was promoted to assistant manager of **Ford Motor Co.'s** assembly plant in Buffalo. **J. T. Edgcomb** and **R. F. Landgraf** were named general superintendents of production.

Ampco Metal Inc., Milwaukee, appointed **Alfred D. Jenss** as district manager of its Cincinnati office. For the last several years he has been field engineer out of Milwaukee.

Changes in the Gary, Ind., steel works announced by **Carnegie-Illinois Steel Corp.,** U. S. Steel Corp. subsidiary, are: **Ralph W. Dickson** has been named divisional superintendent of the central mills. Mr. Dickson has been associated with the Gary works since 1927 when he began as a metal-

RICHARD E. KRAFVE
heads defense production div. at Ford

RALPH W. DICKSON
division supt., central mills, Gary Steel Works

J. E. WELDY
marketing manager for Carboloy

GRANT A. COLTON
Golden-Anderson V. P. and general manager

WILLIAM J. McKEE
gen. sales mgr. at National Tube

lurgical laboratory helper. **Otto A. Clarke,** formerly rail mill superintendent, was made assistant central mills division superintendent. His association with the plant started in 1916. **Richard Lenahan** became rail mill superintendent succeeding Mr. Clarke.

Appointments of **J. E. Weldy** as marketing manager, **J. S. Gillespie** as product sales manager, and **J. M. Bertotti** as field sales manager are announced by **Carboloy Co. Inc.,** Detroit.

John T. Gossett was named president and general manager of **Central Scientific Co.** and its California and Canadian subsidiaries, and vice president and director of Cenco Corp., Chicago, the parent stockholding organization. Mr. Gossett was formerly vice president and general manager, Inland Steel Container Co.

Election of **Grant A. Colton** as vice president and general manager is announced by **Golden-Anderson Valve Specialty Co.,** Pittsburgh. Mr. Colton has served as assistant manager of the company since 1934.

Carl M. Peterson was appointed director of wage and salary administration for **Pittsburgh Plate Glass Co.,** Pittsburgh. He previously was with Polaroid Corp. in supervisory capacities, and with York Machinery Corp. as an industrial engineer.

Leonard D. Woods was appointed assistant sales manager, **Round California Chain Co.,** Los Angeles. He has been a member of the company's sales staff for four years.

Thomas Wolfe was elected president of **Pacific Airmotive Corp.,** Los Angeles. He formerly was vice president of Pan American World Airways.

William J. McKee has been appointed general sales manager of **National Tube Co.,** Pittsburgh, U. S. Steel Corp. subsidiary. **Louis W. Mason,** formerly assistant to general manager of sales, succeeds Mr. McKee as sales manager, central area. Mr. McKee's experience with National Tube dates back to 1912 and covers many positions in the operating and engineering departments. Mr. Mason, who started his business career with Carnegie-Illinois Steel Corp., joined National Tube as a buyer in the purchasing department in 1923. He moved to the sales department in 1944.

John C. H. Wendes was appointed production manager, **Naugatuck Chemical Division,** United States Rubber Co., New York. **Joseph P. Monahan** was appointed general control manager of the division. Both will make their headquarters in Naugatuck, Conn.

OBITUARIES...

Richard C. Kinley, 71, who, as announced in Aug. 7 issue of STEEL, just retired as vice president and works manager, **National Acme Co.,** Cleveland, died at Huron Road Hospital Aug. 10. Joining National Acme as an apprentice machinist in 1903, two years after it was moved from Hartford, Conn., Mr. Kinley literally grew up with the company in Cleveland, becoming recognized as one of the ablest plant managers in the screw products and machine tool industries.

Harvey H. Brown, 57, president, **Cleveland Hobbing Machine Co.,** Cleveland, and a director of Eaton Mfg. Co., Inland Investors Inc., Industrial Brownhoist Corp., and other firms, died Aug. 11.

Frank A. Markley, 64, retired president, **Lake Erie Forge & Machine Co.,** Cleveland, died Aug. 12.

Alfred J. Miller, 76, president, **Ramapo Foundry & Wheel Works,** Ramapo, N. Y., died Aug. 12 of a cerebral hemorrhage.

Charles F. Blackmer, 73, from 1933 to 1938 president of **American Steel & Wire Co.,** Cleveland, subsidiary, U. S. Steel Corp., died in a hospital in Atlanta Aug. 15. Since his retirement he had made his home in Clearwater, Fla. Mr. Blackmer was identified with U. S. Steel subsidiaries for many years, and came to Cleveland in 1929 as general superintendent.

James C. Von Daacke, 56, New England district manager for **Western Brass Mills Division** of Olin Industries Inc., New Haven, Conn., and a former vice president, American Brass Co., Waterbury, Conn., died Aug. 8 after a brief illness. He was deputy director of the copper division of the War Production Board during the second World War.

Louis C. Hummel, 63, president, **Hummel Mfg. Co.,** St. Louis, heavy steel plate fabricator, died Aug. 7 at a hospital in Denver, Colo., where he had been a patient for a year.

Harold S. Arnold, technical assistant to the president of **International Nickel Co. Inc.,** New York, died Aug. 7.

Frank Lasker, 72, treasurer, **Lasker Boiler & Engineering Corp.,** Chicago, died Aug. 7.

Ames Penfield, 54, merchandise manager for **James B. Clow & Sons,** Chicago, for 30 years, died Aug. 6 following a heart attack.

HALF + *the other* HALF

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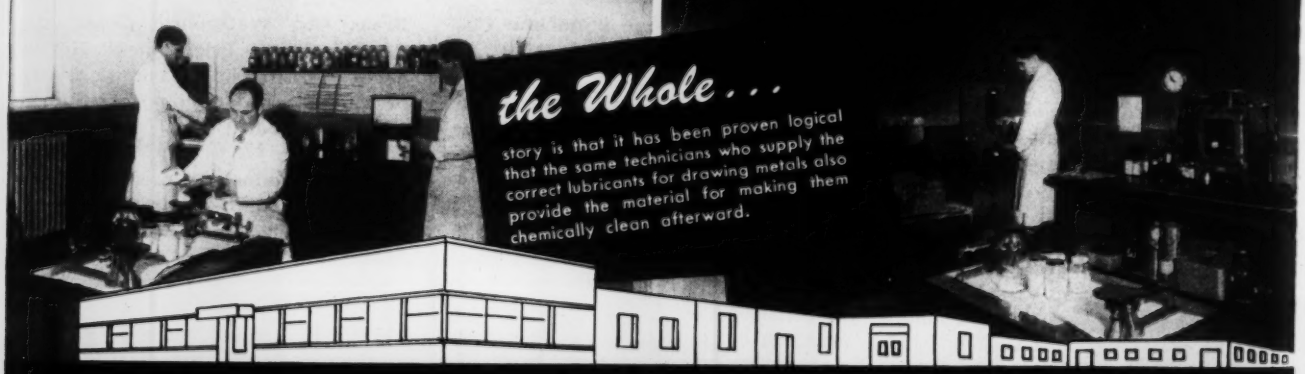


the Whole . . .

story is that it has been proven logical that the same technicians who supply the correct lubricants for drawing metals also provide the material for making them chemically clean afterward.

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

. . . serving you since '32

Production Engineering

NEWS AT A GLANCE

PART SIZE NO OBSTACLE—While used primarily to form large jet aircraft parts such as bulkheads, a giant 5000-ton press Birdsboro Steel built for Boeing Airplane Co., can also make many assorted small parts in one operation. The hydraulic unit works from a single rubber die cushion which presses and molds the metal around one or several single dies simultaneously. With its four working tables, two automatic and two hand-operated, loading and unloading is speeded to keep pace with the pressing operation. The press operates at better than two cycles per minute and will accommodate a sheet up to 120 inches long and 48 inches wide.

LIFTS THEM BY THE DOZEN—Twelve rather than six oil drums can be moved at one time in loading operations by drum hooks and a spreader bar redesigned by an Army transportation officer at Fort Stoneman, Calif. The new type hooks use half the amount of chain previously needed, while the double-capacity spreader bar makes almost automatic the unhooking of the drums once the movement is completed.

NEW TECHNIQUES MAKE BETTER CASTINGS— Alloyed iron cylinder sleeve castings for heavy engines made by using new foundry techniques at Perfect Circle Corp., Hagerstown, Ind., are reported to provide considerably superior wear resistance. Operations here center around a centrifugal spinning machine designed by Perfect Circle engineers. This provides automatic mold handling as well as automatic control of spinning time, mold temperature and thickness. As a result, inner and outer diameters of the liners are held to plus or minus 0.03125-inch and out of roundness is held to a maximum of 0.010-inch. Stock allowed for clean up is less than that involved in conventional casting methods.

MAGNETISM SOMETIMES NO ASSET—Magnetized drills and cutting tools collect chips, heat up and become dull much more quickly than when demagnetized. Furthermore, particles of metal clinging to magnetized machined parts cause severe wear and inaccurate performance. Magnetism creating such undesirable conditions now can be eliminated by a new instrument developed by General Electric Co., Schenectady, N. Y. The device, GE says, is capable of demagnetizing any unshielded magnetically soft material including forms of iron and steel. In the process, it will handle pieces of considerable length, or several small ones simultaneously, provided they are not shielded in any manner.

HEAT RESISTANT BRAZING ALLOY— A stainless steel joint brazed with a heat and corrosion resistant alloy developed by Wall Colmonoy Corp., Detroit, is reported to provide the strength equal to the parent metal at temperatures of 2000° F plus better corrosion and oxidation resistance. The company states the metal, which is made in powder form, can be used to braze 300 and 400 series stainless, Inconel, S-590, Monel alloy, tool, carbon and special stainless steels. When using the new alloy, assembly to be brazed is prepared in same manner as copper brazing, operation itself being best accomplished in pure dry hydrogen of minus 40° F dew point or below. Tensile strength of the joint at 2000° F is about 90 per cent that of the parent metal.

ACE IN THE HOLE—In view of the current Korean situation, news that the Steep Rock properties deep in the Canadian wilds could contain upward to one billion tons of high quality, hematite ore is indeed encouraging to the U. S. steel industry. All iron deposits here are of deep seated origin, extending from close to the surface to several thousand feet in depth. Operators firmly believe that minable ore exists in hundreds of millions of tons which could easily support anticipated production of 10 million tons per year for many decades. The "find" is an excellent adjunct to the gradually declining Mesabi reserves, being only 140 miles from the ore loading docks at Port Arthur, Ont. (p. 88)

GIVES PRODUCTION LIFT—Recognizing need of work handling systems in batch methods of heat treating, Westinghouse has come up with an idea that speeds processing of cylindrical rolls in connection with induction hardening. The machine involved case hardens the work on a one-at-time basis to meet "in-line" production requirements. Lift in production, however, is provided by an automatic work loader. A press of the start button automatically begins operations of feeding, rotating, heating, quenching and discharging. (p. 94)

TRIPLE PAY OFF—By overhauling its inventory control system, storage areas and materials handling methods, Thompson Products, Cleveland, was able to speed deliveries of needed stocked items, save floor space and cut overhead costs. Biggest job accomplished to make the system work was to educate suppliers — getting them to ship in materials in smaller containers. With system now in full operation, the company uses 25,000 fewer square feet of floor area. (p. 96)

SHEAR TROUBLE NIPPED—Many innovations to eliminate disadvantages of many common type slab slicers are included in a German-developed up-and-down-cut shear now manufactured in this country by Birdsboro Steel & Foundry Co. Positive control of the slab, quick release of sheared slab portions and unobstructed access to the shear throat are among features of the new unit. Entire shearing operation takes place in one revolution of the main crank. (p. 100)

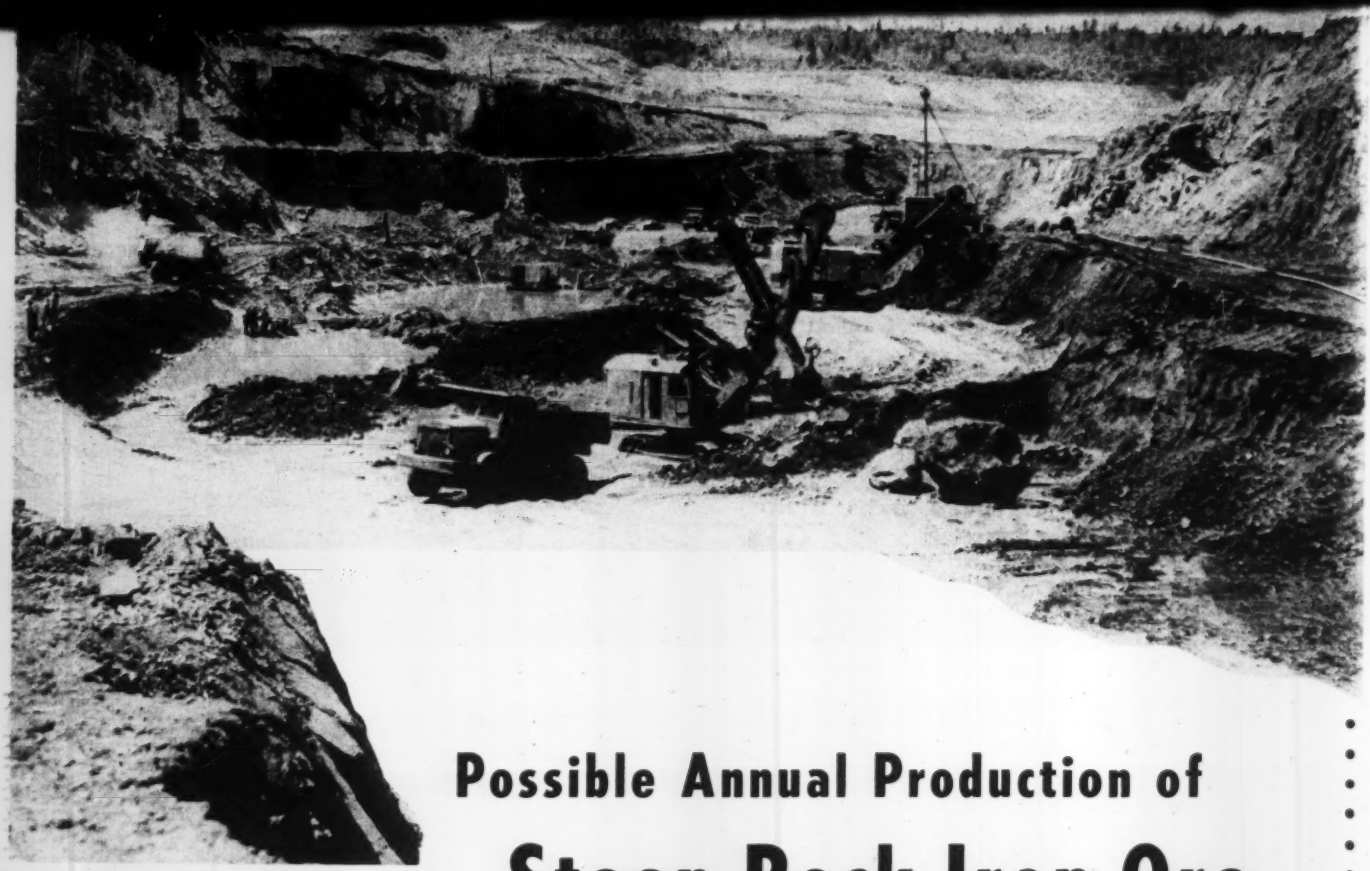


Fig. 1 (above)—View looking west into the B ore body which is being mined by open pit operation. In 1952 underground operations will begin on this body at approximately the 400-foot level

Fig. 2 (below)—At right is seen the west end of the gradually draining Middle B ore body mining operation and at left is the Bay area of Steep Rock lake which reposes over the A ore body. The original shoreline of the lake is visible in the distance

Possible Annual Production of Steep Rock Iron Ore Seen As 10 Million Tons

Due to the unsettled international situation with its possibility of World War III, Steep Rock iron ore takes on new importance as it requires only a 140-mile railroad haul to available Great Lakes shipping facilities at Port Arthur, Ontario

By DAN REEBEL
Associate Editor, STEEL
Photography by the author

TRIUMPH over almost insurmountable engineering difficulties deep in the Canadian wilds highlights the Steep Rock Iron Mines' story of the removal of high grade iron ore from the bottom of what once was a 150-foot deep lake. Both the water diversion program and drainage of a portion of Steep Rock lake —necessary before any ore could be uncovered and mined—were engineering achievements of no small magnitude which required great courage and fortitude on the part of both the operating engineers and developers of the property.

The importance of Steep Rock ore cannot be overestimated in the light of the current Korean situation and possible subsequent international conflict. They are an excellent adjunct to the gradually declining Mesabi reserves, being only 140 miles from the ore loading docks at Port Arthur, Ont. and should play an important part in the retention of our steel industry at its present operating locations.

As early as 1897, geological parties were convinced of the presence of iron ore in this area—located seven miles north of the main line of the Canadian National Railway at Atikokan, Ontario—due to the presence of large quantities of hard hematite float ore which was found in abundance along the south shore of the lake. In light of this evidence, both explorers and geological parties were positive that iron ore could be uncovered at the bottom of the lake and during the period of 1938-41 extensive diamond drilling proved the supposed existence of three vast ore bodies designated as A, B and C—all containing ore of a bessemer quality, being very low in phosphorus and silica.

Believe One Billion Tons Available—On the basis of this exploratory program, it was estimated that the property contained at least 73,459,596 tons of proven and probable ore in the A and B bodies. The C ore body which is currently under development by Inland Steel Co. is expected to add materially to reserves of the area. It is believed the Inland workings will contain at least 100 million tons and its developers expect an annual production of approximately 3 million tons to be realized in the future. The United States Bureau of Mines recently quoted an experienced mining engineer as saying that not less than one billion tons of high quality, hematite ore will be found in the Steep Rock property.

AVERAGE ANALYSIS OF ORES MINED IN THE STEEP ROCK DISTRICT

(In Percentages)

	Iron	Phos.	Sil.	Mang.	Alum.	Lime	Mag.	Sul.	Ignition Loss	Moisture
Seine River										
Dry	57.25	0.027	6.85	0.21	1.47	0.28	0.21	0.046	8.50	
Natural	51.63	0.024	6.18	0.19	1.33	0.25	0.19	0.041	...	9.82
Steep Rock Lump										
Dry	60.99	0.025	3.35	0.17	0.77	0.30	0.21	0.038	8.55	
Natural	58.97	0.024	3.24	0.16	0.74	0.29	0.20	0.037	...	3.31

Upper line represents analysis of the ore dried at 212° F and the lower line the ore's analysis in its natural condition.
Source: Lake Superior Iron Ore Association

According to Cyrus S. Eaton, Cleveland financier and developer of the property, there are at least seven other ore bodies located in the area, all containing a high grade hematite which, with the A, B, and C bodies, should make possible an annual production of 10 million tons in the future. Today's production from one mine known as the Errington—the B ore body—is currently well ahead of last year's schedule when 1,134,261 tons were shipped. Output of the mine could easily reach 1,300,000 tons this year.

Iron Content Higher Than Average—All the Steep Rock iron ore deposits are of deep seated origin extending from close to the surface to several thousand feet in depth, and the operators firmly believe that minable ore exists in hundreds of millions of tons which could easily support the anticipated production of 10 million tons a year for many decades. Iron content of the Steep Rock ores is substantially higher than the average of all other ores mined in the upper Great Lakes area, analyzing approximately as shown in the accompanying table.

Geophysical work carried on during last winter

Fig. 3 (below)—At left is the east end of the B ore body open pit and at right is seen the Falls Bay area of Steep Rock lake whose northern portion covers the C ore body currently under development by Inland Steel Co. Note pumping station on the lake which furnishes water for the hydraulicing operations performed in the B ore body open pit

suggests the probability of the entire 6000-foot gap between the ends of the A and B zones as being ore bearing. Test drilling performed at several points between the A and B bodies bears out the above assumption; however, exploration is still in progress. Geological evidence suggests that the majority of the known ore bodies will probably go to depths beyond the limits of economic mining.

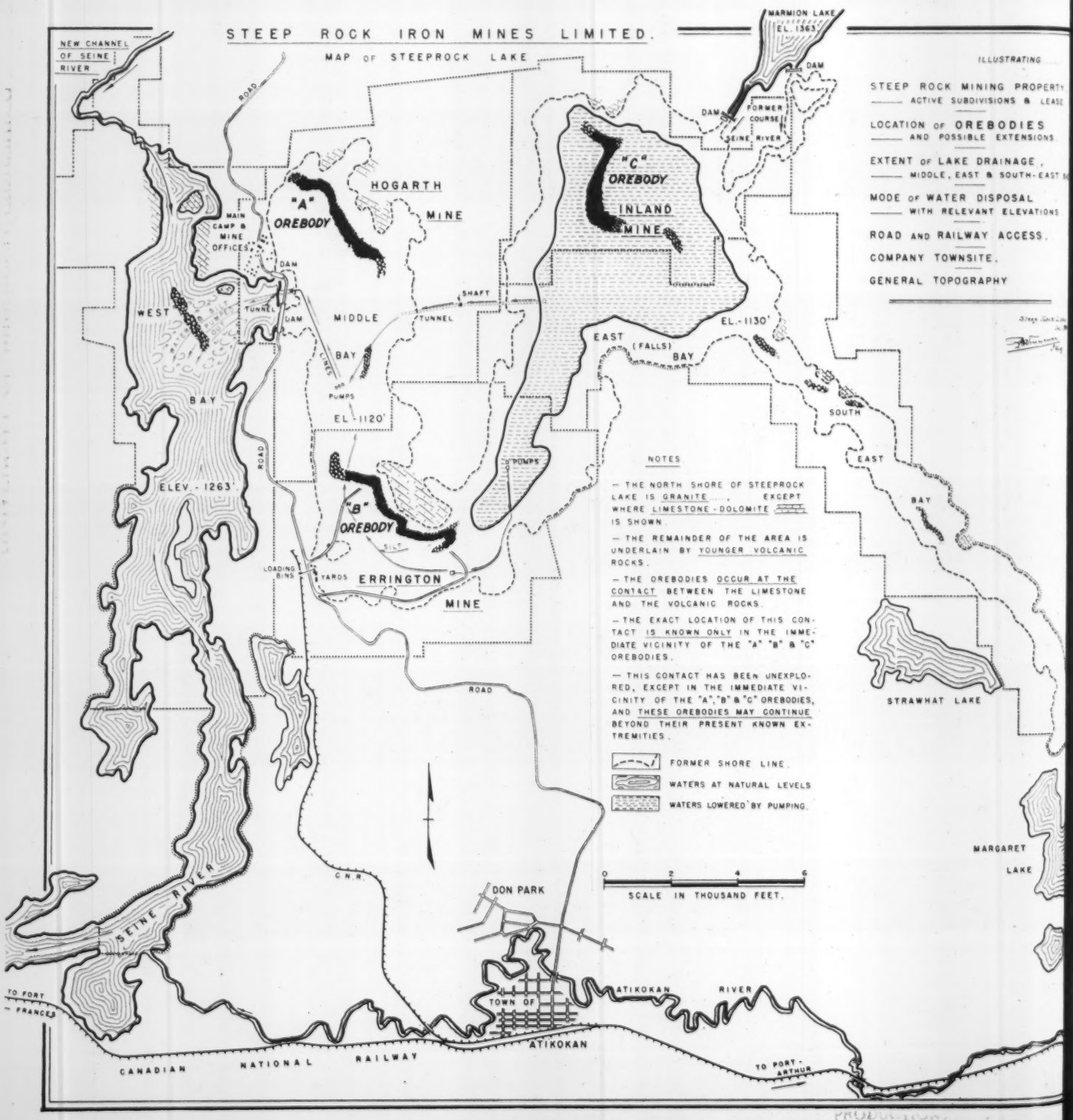
4000-Foot Belt Conveyor Planned—A vertical shaft is now being sunk in the B zone which will afford underground mining beginning at approximately the 400-foot level. The present plan is to extend drifts off on right angles at successive 200-foot levels. This underground mining operation will utilize a 4000-foot long rubber belt conveyor at each level, being 30 inches wide and capable of handling 380 tons of ore per hour up to 16-degree slope. The conveyors will by-pass the shaft and go directly to the carloading terminal. Provision also is being made to accelerate production speeds when and if necessary.

Method of mining utilized will be block caving which, according to the operators, will offer costs and capacities at least as favorable as open pit operation.

Geological Theory Indicates Replacement By Iron Oxides—Geological opinion of both Hugh M. Roberts,

Fig. 4 (below)—General map of the property showing the various ore deposits, extent of lake drainage, mode of water disposal, and general topography of the area

Fig. 5 (right)—This map shows the elaborate water diversion scheme that was necessary before the drainage of the lake could be effected and the silt overburden removed from the B ore body



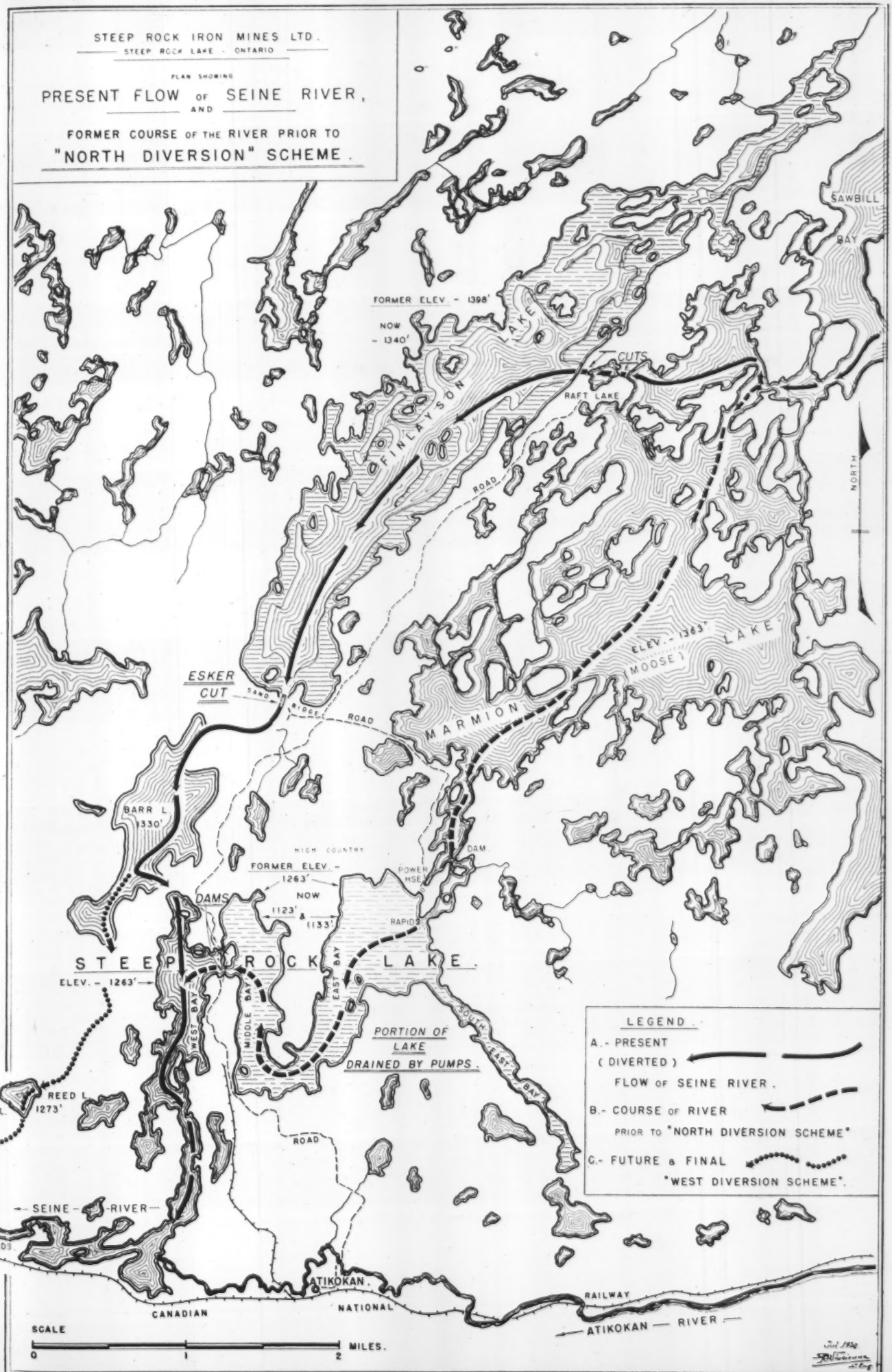

STEEP ROCK IRON MINES LTD.
STEEP ROCK LAKE - ONTARIO
PLAN SHOWING
PRESENT FLOW OF SEINE RIVER,
AND
FORMER COURSE OF THE RIVER PRIOR TO
"NORTH DIVERSION" SCHEME.
SAWBILL BAY
FORMER ELEV. - 1398'
NOW - 1340'
CUTS
FINLAYSON LAKE
RAFT LAKE
ROAD
NORTH
ESKER CUT
SAND RIDGE
ROAD
MARMION LAKE
ELEV. - 1363'
(MOOSE)
BARR L.
1330'
HIGH COUNTRY
FORMER ELEV. - 1263'
NOW 1123' & 1133'
DAMS
POWER HSE.
DAM
RAPIDS
STEEP ROCK LAKE.
ELEV. - 1263'
WEST BAY
MIDDLE BAY
EAST BAY
SOUTH EAST BAY
PORTION OF LAKE DRAINED BY PUMPS.
REED L.
1273'
ROAD
SEINE RIVER
RAPIDS
ATIKOKAN.
CANADIAN NATIONAL RAILWAY
ATIKOKAN RIVER
LEGEND
A.- PRESENT (DIVERTED) FLOW OF SEINE RIVER.
B.- COURSE OF RIVER PRIOR TO "NORTH DIVERSION SCHEME"
C.- FUTURE & FINAL "WEST DIVERSION SCHEME".
SCALE
0 1 2 MILES.

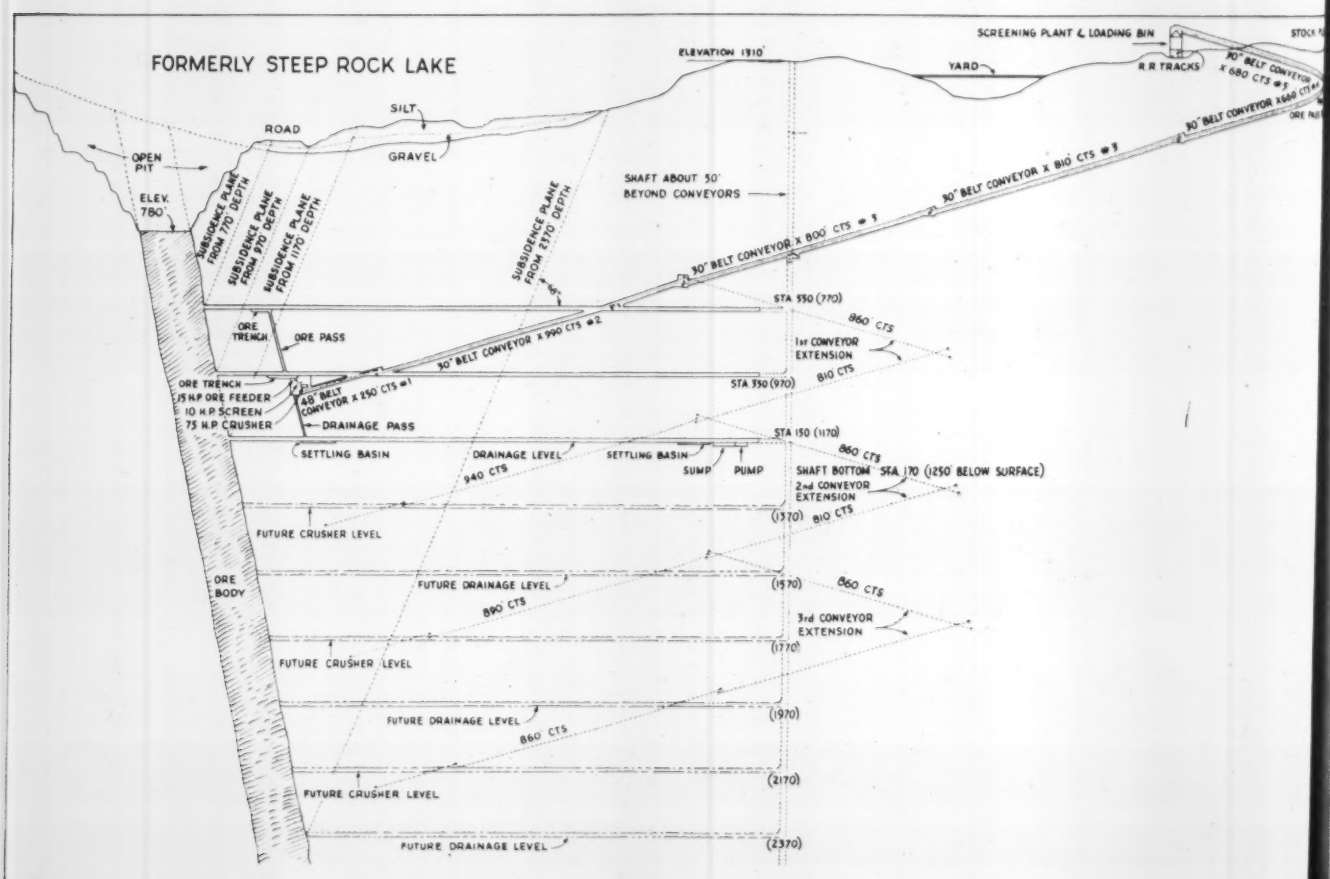
Fig. 6—M. D. Harbaugh, executive vice president of the Lake Superior Iron Ore Association, at left, and M. S. Fotheringham, vice president and general manager of the mining company, are inspecting pieces of high-grade hematite float ore on the original shoreline of the lake. It was the presence of this type material that first led explorers and geologists to suspect the possibility of iron ore deposits underlying the lake

consulting mining geologist, and M. W. Bartley, formerly geologist of the Steep Rock Iron Mines, Ltd., is that these ore deposits were formed as the result of replacement by iron oxides through the agency of hydrothermal solutions and the accompanying action of vapors under pressure. The replacing solutions came in as igneous after-effects, following upon the intrusion of basic igneous rocks that invaded the hanging wall volcanics. This process in the culmination of which clean iron oxides were formed, went quite fully to completion except for minor remnants. This is shown by the notable uniformity of the several constituents in the ore. They further assert that, to the best of their belief, the above action took place in a geological period roughly equivalent to the late Middle Huronian, which was the period when the most extensive iron-bearing rocks of the lake Superior region were formed.

The writer recently had the pleasure of visiting at Steep Rock and while in the company of "Pop" Fotheringham, vice president and general manager, and Bill Bennett, general superintendent, took a ride up the Falls Bay area of Steep Rock lake in the patrol boat to Inland's workings at the C ore body to inspect a diamond drilling operation. On the way back members of our party reported they saw a group of bears drinking at the lake's edge which gives some indication of the wildness of this country and the problems which faced the developers in bringing the property into production.

Diversion Program—An Engineering Achievement—The water diversion program mentioned earlier was essentially to redirect the flow of the Seine river which previously flowed into Steep Rock lake and then pump the lake dry so mining could take place as soon as the silt overburden was removed. Stages of the job included pumping the water from Raft lake into Marmion lake and then lowering the level of Finlayson lake by blasting a tunnel through solid rock and dredging away the sand barrier at Esker cut to permit the water to flow southward and form

Fig. 7—Longitudinal section showing the vertical shaft presently being sunk at the B ore body and the general arrangement of the conveyors which will bypass the shaft, delivering the ore directly to the screening and loading area



a new channel for the Seine river. This was followed by blasting cuts to connect Marmion lake and Finlayson lake through a control works and Raft lake, diverting the Seine river by cutting out its original channel into Steep Rock lake by a dam, filling the channel to make the river reverse its course and flow through Raft and Finlayson lakes, damming the eastern arm of Steep Rock lake where the B ore body reposed and pumping out 118 billion gallons of water. It was necessary to build 20 miles of motor roads on the property in order to carry out this water diversion program.

Lake Lowered 6 Inches Daily—Fourteen electrically driven, centrifugal pumps were used to lower the middle or south portion of Steep Rock lake at the rate of 6 inches per day. The lake lay in a rock basin and had no water flows from outside the basin itself. After pumping had been concluded, removal of the clay and stone overburden on the B ore body was begun. Some difficulty was encountered early in this operation owing to the wet, soft nature of the silt lying immediately below the lake bottom.

To operate the pumps and other electrical equipment, it was necessary that the Ontario Hydro-Electric Power Commission build a power line from Port Arthur to Steep Rock lake. The Canadian National Railways built a spur line from Atikokan, Ont. to the mine crusher and loading terminal and the Dominion government constructed the ore docks at Port Arthur.

Present plans call for the immediate removal of approximately 40 to 50 million yards of silt overburden reposing on the A ore body. To expedite this work, one of the world's largest dredges is being assembled at the mine. This unit, using 6000 hp on the main pumps, has a maximum output of 2 million cubic yards per month. Water to supply the dredge will be taken from the Falls Bay area of Steep Rock lake which covers the C ore body and will be discharged into the West Bay area of Steep Rock lake.

When the Hogarth mine, which is the A ore body, is brought into production in 1952, it is expected a total of 3 to 4 million (*Please turn to Page* 110)

Fig. 8—Jets of water at approximately 110 psi are utilized for stripping the silt overburden from the ore bodies and also to keep the banks of the pit back to the proper angle of repose. This water comes from the lake's Falls Bay area and is eventually pumped into the West Bay area

Fig. 9—View of the car loading area at the mine. It only requires a 140-mile rail haul to the ore shipping docks at Port Arthur, Ont.

Fig. 10—This diamond drilling operation is exploring the geological structure underlying the Falls Bay area of the lake. The drill enters the ground at an angle of about 45 degrees. Note lake at left

Cylindrical Parts

Induction Heated in Continuous High

A flexible new machine selectively case hardens shafts from ⅜ to 2 inches in diameter and from 1¾ to 18 inches long, one at a time, to meet "in-line" production requirements. Feeding, rotating, heating, quenching and discharging operations are automatic

By W. L. CORTEGGIANO
Electronics and X-ray Division
Westinghouse Electric Corp.
Baltimore

BATCH methods of heat treating are apt to be bottlenecks in many modern high-speed production lines. With the increasing application of radio-frequency induction heating equipment to metal working production lines, new work-handling systems are needed to extend the utility of this tool for continuous, high-speed production lines.

Basically, the process of case hardening by radio-frequency induction heating involves the concentration of heat in a shallow layer at the surface of the steel being treated. Then, upon quenching, only this shallow layer is hardened, producing a hard case and a tough core. If selective hardening is required, some means must be employed to restrict the application of heat only to the area to be hardened.

Meets "In-Line" Production Needs—The new Westinghouse horizontal rotating scanner with automatic work loader selectively case-hardens miscellaneous cylindrical parts—one at a time—to meet "in-line" production requirements. It is flexible in work capacity, and can handle grooved, notched, splined and shouldered shafts.

Although designed for maximum flexibility, it was found necessary to limit the scope of the machine to a specific range of shaft sizes. The machine handles shafts from ⅜ to 2 inches in diameter, and from 1¾ to 18 inches in length. This range represents, for example, a cross section of the various size shafts used in the automotive industry, more commonly known as wrist pins, shifter rails, clutch shafts, tractor bushings, guide posts and other miscellaneous cylindrical parts.

Only minor adjustments are required when changing from one size and type of shaft to another. This is accomplished by a set of rotating rollers for gripping and rotating the work pieces, an operation which would otherwise have required numerous collets.

Operations Automatic—After loading a hopper and pressing the "start" button, operations of feeding, rotating, heating, quenching and discharging are maintained automatically. Continuous operation is realized by keeping the hopper loaded—most probably by feeding it from a continuous conveyer.

For totally case-hardened shafts, the continuous heating and quenching cycle presents no problem. However, where only selected areas are to be treated, process timers must be incorporated to turn on the radio-frequency generator at the proper intervals.

Simple Operation—The loader starts work pieces on their way for processing. It is equipped to receive several different types of magazine loaders. Magazines are so designed that the operator cannot run

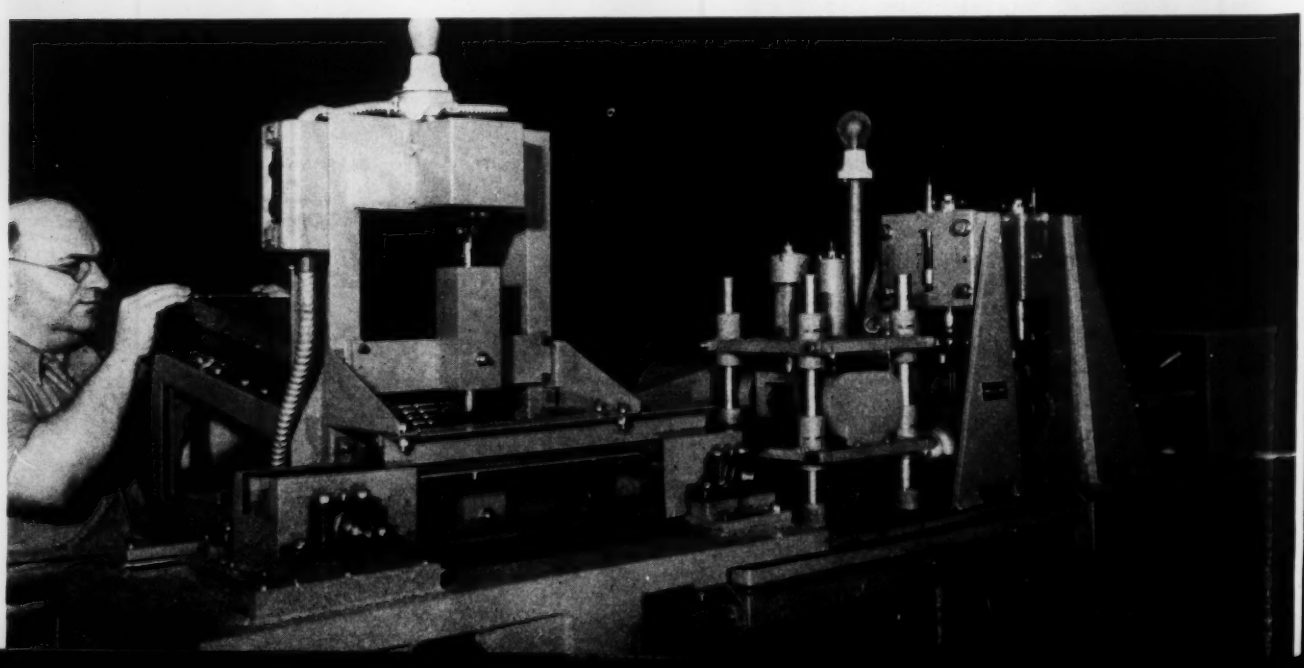


Fig. 1—Horizontal rotating scanner. Operator needs to know only two controls: Main breaker of the radio frequency generator, and the machine "stop-start" pushbutton. Once started, the operation is fully automatic

h Speed Production

anything except those parts for which the machine is adjusted; i.e., he cannot rotate the work pieces longitudinally, producing an incorrect hardness pattern.

Shafts roll down the magazine and are released to the conveyor belt one at a time in synchronism with the shafts leaving the scanner. Two solenoid-operated selectors operate, first to allow one shaft onto the conveyor and then to let another shaft into the ready position. The conveyor has guides mounted above it to position the shafts directly in line with the pick-up rolls on the feeder unit. The conveyor belt moves slightly faster than the train of shafts in the scanner, maintaining a continuous flow of work pieces.

Feeder Picks Up Shafts—The feeder units pick up the shafts as they come off the conveyor belt. Rubber-faced rollers exert a light pressure on the shafts and force them forward to a second drive roll. The pick-up roll exerts relatively little pressure on the shaft and imparts only a small amount of the forward motion. If too much pressure were exerted, the shafts might not enter, because the conveyor belt exerts only a small longitudinal propelling force. A second drive roll provides most of the force necessary to propel the train of rails through the coil-quench fixture. Upon entering the head stock, the shafts are given rotary motion prior to passing through the coil-quench assembly.

Upper idlers can be skewed so that, in addition to rotary motion, the shaft can be given forward motion. This same setup is duplicated in the tail stock, where the rollers take hold of the shaft before it is completely free of the head stock. In this way, the shaft is always centered in the inductor coil and quench applicator, insuring a uniform concentric case. For shafts with splines and deep grooves, the rollers can be replaced with collets to insure smooth longitudinal and rotary movement through the coil-quench assembly.

The inductor coil and spray-quench applicator are a single assembly mounted between the head and tail stock. Heavy low-inductance copper leads carry the radio-frequency current to the coil and act as the supporting members of the assembly. These leads connect with the secondary of a current transformer through a slotted output terminal mounted in the bed plate of the machine. The primary current transformer leads are connected directly to the radio-frequency generator.

Selective Timer Included for Rails—To harden rails selectively, a selective timer mechanism must be included in the machine. As the rails leave the tail stock of the scanner, they operate a micro-switch mounted over the out-feed guide trough. This switch triggers the selective timers which, in turn, key the generator so that power is automatically applied as selected shaft areas pass through the inductor coil. These timing circuits also control the solenoid-operated selector in the magazine feed mechanism to allow another shaft to feed into the conveyor belt at the proper time.

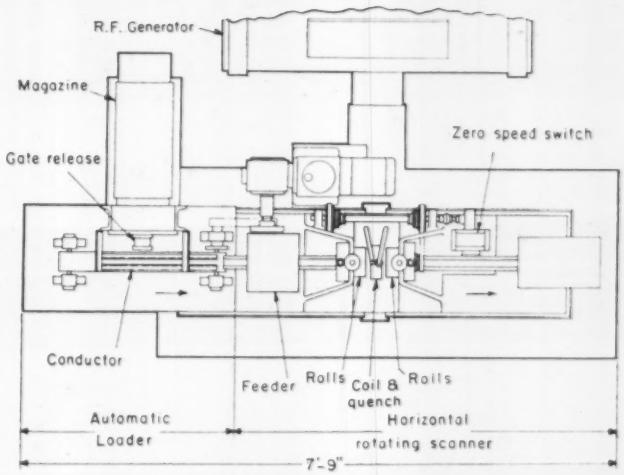


Fig. 2—Outline drawing, showing relative locations of the components of the machine proper and relative position of radio-frequency generator

At the tail stock end of the scanner is a "zero speed" switch. This switch is a roller-operated tachometer generator which, when it is at zero speed, actuates a relay which shuts off all power instantly. This is a most important protective device. If the train of shafts should (*Please turn to Page* 104)

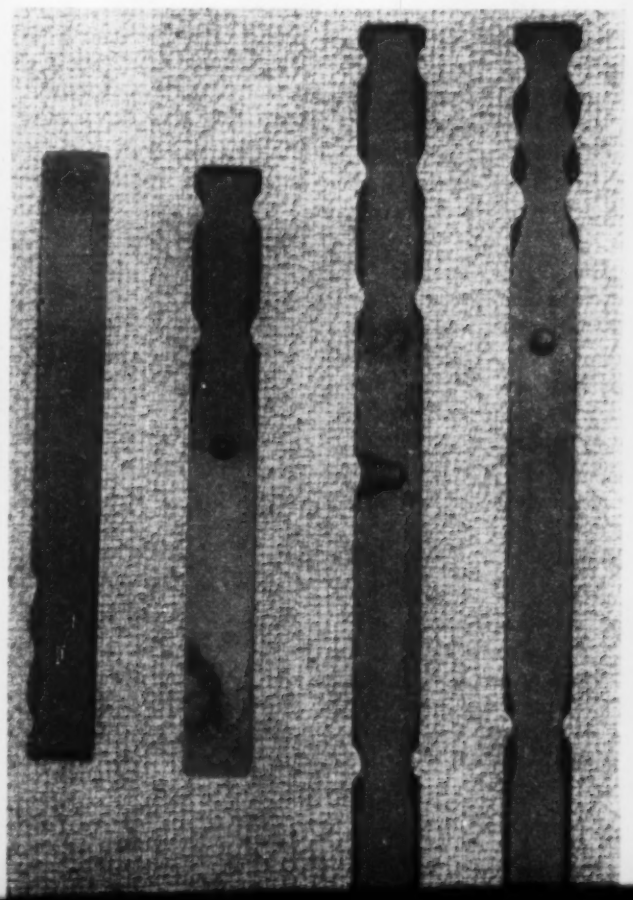


Fig. 3—Some of the hardness patterns obtainable with the machine are shown in these automobile shifter rails which have been cut and etched. By selection of correct timer control circuits, any hardness pattern desired can be obtained

Inventory Control System Saves Floor Space, Cuts Overhead Costs

Here's how one company combined inventory control, a four-story building and materials handling equipment into an efficient warehousing system

By HENRY J. HOLTZ
Assistant Editor, STEEL

ESTABLISHING an inventory control system at Thompson Products Co., Cleveland, turned out to be a real bonanza for the company.

Here is what it accomplished: It allowed the company to consolidate several warehouses into one, make efficient use of what could be an inefficient four-story building, reduced its manpower requirements and speeded receiving and shipping operations.

Up until recently the multitude of automobile, truck and other miscellaneous parts stocked were warehoused in three buildings, somewhat widely separated for efficient operations. Furthermore, it meant that keeping of records was complicated and inventory control was made most difficult, not to mention problems involved in shipping the right parts to the right warehouse and picking orders for shipment.

A figure in the vicinity of 23,000 relates the number of different parts which are kept in stock. About 100,000 pounds of these items are handled daily. With these figures in mind, and with a postwar boom in replacement parts expected to materialize, the company's inventory control department set about to analyze its inventory requirements and functions.

It was determined that if use were made of pallets, more efficient use could be made of the floor space in a four-story building, the one of the three deemed best suited for a warehouse. The program was then carried to the many vendors supplying Thompson with a wide variety of parts, the request being to have all materials shipped in on pallets if at all feasible. It was also determined that if these materials could be shipped in smaller containers, handling, storing and control would be made much easier.

All Was Not Rosy—Once this program was underway, some shortcomings developed. It was found that small corrugated cardboard containers stacked on pallets could not be stacked on top of other loaded pallets, as many of the parts became damaged when containers were crushed. Furthermore, many of the items did not lend themselves to stacking in any way.

Pallet design had to be changed; the double-faced type had to be discarded in favor of that with three runners across the width. Stacking pallet boxes had to be equipped with flanges so that the leg of the box above would cradle in it and not slip off the edge.

After having viewed some of these shortcomings, Thompson began to install skeleton pallet racks (Fig. 2). Built with cross members adjustable for clearance and height, these units served to solve many of the problems just enumerated. Pallets loaded with boxes containing relatively fragile parts could be tiered up to four high, each pallet resting on its own shelf.

The Picture Changes—Under the present system, up to a half dozen different parts may be found on the same rack. With demand for parts somewhat seasonal and sporadic, the company feels that it is economically unsound to continuously move parts around to keep similar items together. Stock of a similar nature is kept in a certain zone, but not on a certain shelf, this method being used because of the changes in the demand picture. Most popular items in stock with greatest turnover occupy only two or three pallets.

Fig. 1—Material in foreground is in area reserved for incoming and outgoing material which is moved to and from this area by elevator. System makes for most efficient use of elevators; some of disadvantage of multiple story warehouse is offset

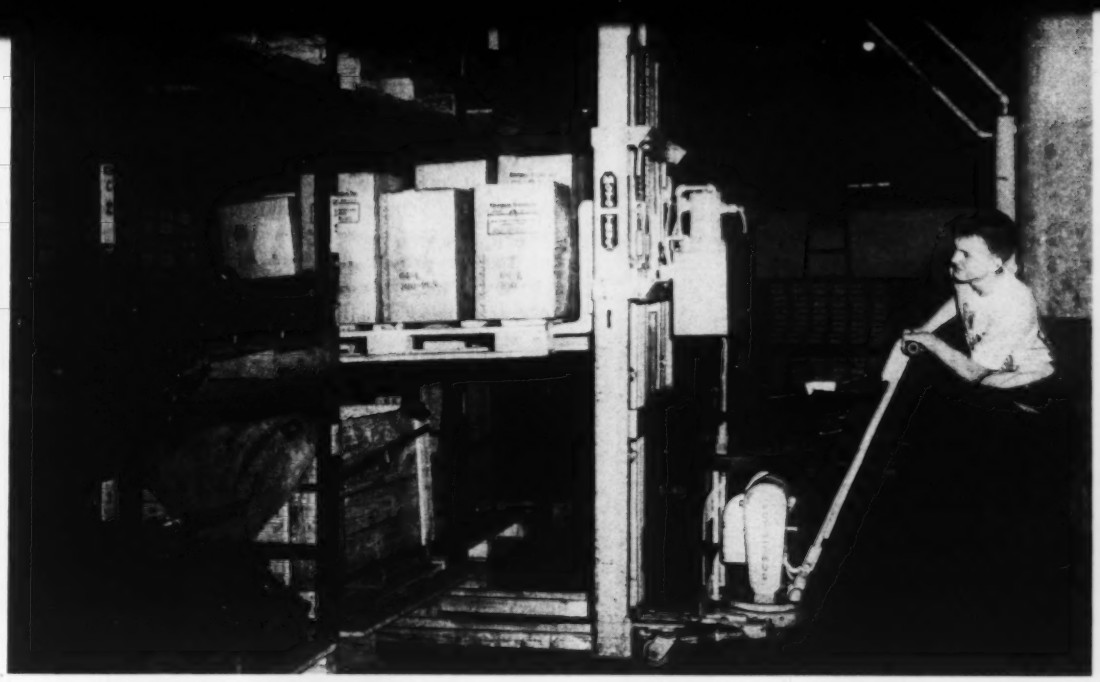


Fig. 2—Using an electric-powered Moto-Truc, a warehouse employee is maneuvering a palletized load of cartons into a skeleton pallet rack in the heavy parts section. Complexity of warehousing and handling problem may be seen from variety of types of shipping media shown: Various - sized cartons, skid boxes, tote pans, material strapped to racks, burlap bags

As stated previously, vendors have been requested to ship on pallets and in smaller containers. Thompson has found the response of the supplier to be generally very good, although it feels that as far as the total picture is concerned, the surface has hardly been scratched.

The case is cited where one supplier of small parts shipped them in a wooden container calculated to cost several times that of a corrugated box. Besides being larger and more difficult to handle, the wooden box occasionally caused the parts to rust and brought about return of the shipment.

All Types of Packages—The pallet racks now in use have been found to lend themselves nicely to the wide variety of container sizes received. Among the other types of shipping containers still received are kegs, wood boxes, wire bound boxes and burlap bags.

With this program now in full swing, Thompson has been able to use about 25,000 fewer square feet of floor area to do the same job of warehousing. Along with the better control which has come about, the operation as a whole has been able to proceed with three or four fewer men.

All of the parts kept in stock are received by truck and the great majority are shipped out the same way. A few shipments are sent out by rail, these being mostly destined for overseas.

As there are limitations on the floor loadings in the building, the heaviest items are stocked on the ground floor. These include such parts as king bolts, tie rod ends and knee-action parts. On the 3rd and 4th floors are the lighter items, along with a packaging room. Partly a by-product of the floor limitations and partly a result of planning for stock supply fluctuations is a system whereby areas on shelves holding the smaller parts are kept open for addition of new stock when it arrives. Here again the zone system is used—stock is kept in a certain zone, not on a certain shelf, this being somewhat of a trend in

Short But Strong—Because of their short overall length, three walking type fork lift trucks made by Moto-Truc Co., Cleveland, are used for spotting pal-

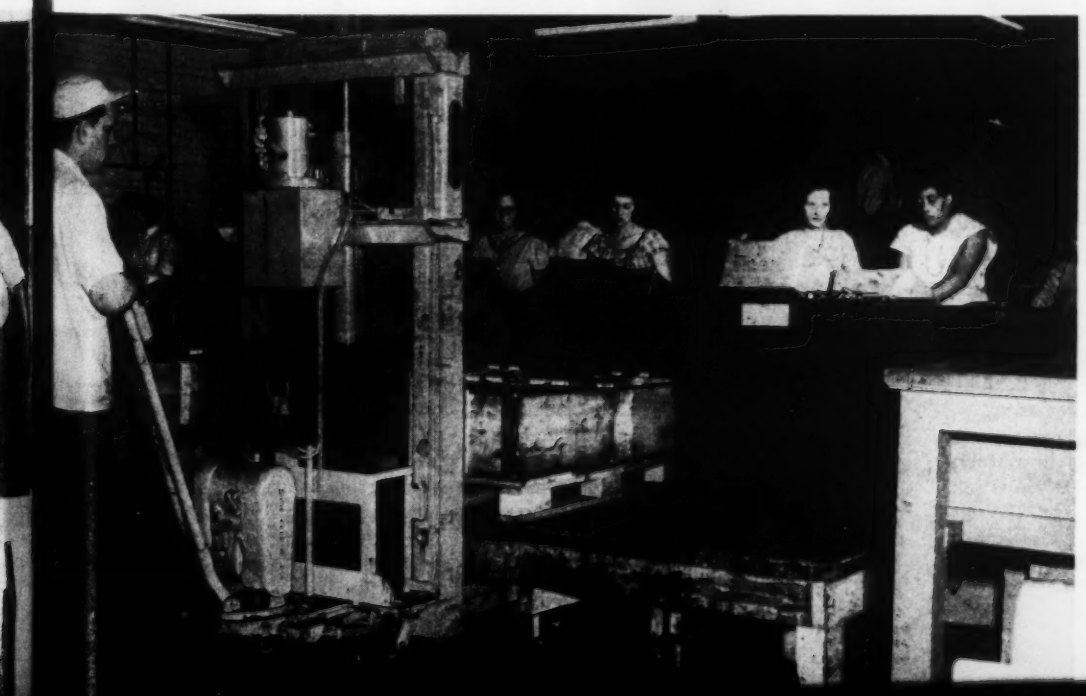


Fig. 3—By using short turning radius truck, packaging line is supplied with bulk material. Such items as bearings, wrist pins and valves are moved by hand from pallet boxes to packaging table moving down packaging line by conveyor belt

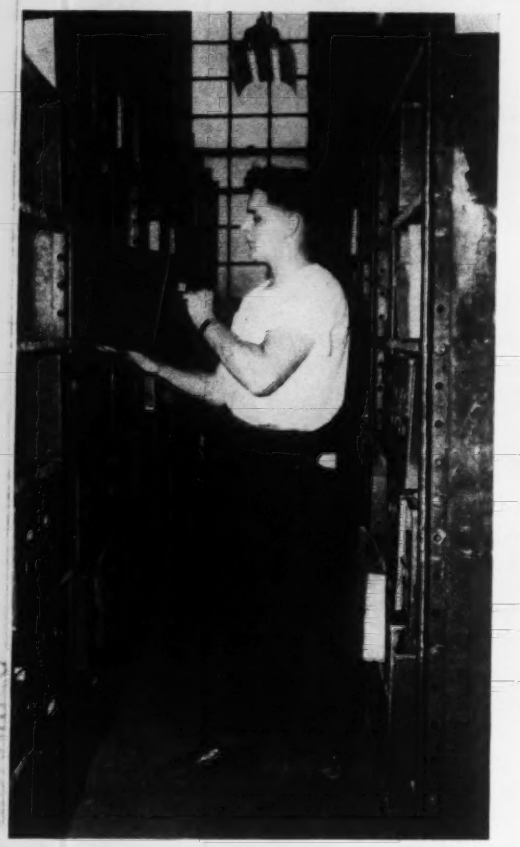


Fig. 4 — Drawer-like containers hold small parts, are serviced by hand. Note open shelf area for fluctuations in supply of stocked items kept on hand

lets in and out of the pallet racks in all but small parts sections where parts are not palletized, but kept in drawer-like containers (Fig. 4). Of 3000-pound capacity, these battery-operated trucks are 81 inches long (without load) and are capable of tiering standard 4-foot pallets at right angles in 6-foot aisles to a height of 110 inches.

Thompson has set its minimum aisle width at 7 feet for reasons of safety. Working on a one-shift basis, these trucks are able to handle all of the stocking operations, along with a Moto-Truc pallet truck of 48-inch length used for pallet transfer.

Two gasoline-powered lift trucks move material from receiving dock to storage area and return and from elevators to packaging conveyors. These trucks, used in conjunction with the elevators, perform the longer hauling operations.

An Elevator Component—Two electric pallet trucks are used in place of hand-operated pallet jacks on the two freight elevators. Used by the elevator operator to move material on and off the elevators, these trucks are theoretically a part of the elevator.

To better suit its four-story building to warehousing operations, the company instituted a system to make the best possible use of its two freight elevators which service all four floors. Once the material is checked off the receiving area, it is sent to the proper floor by elevator and moved into reserved area outside the elevator. From here it is moved into stock by personnel operating on that floor.

Stock is moved to packing conveyors from elevators by industrial trucks. Once the automotive parts are placed in packages, they continue on the belt conveyors which move them to the center of the order filling department.

Inasmuch as the parts are dispensed in rather small quantities, they are placed in half-slotted cartons in which they are transported to the order picking shelves. The order pickers remove the parts needed; when empty, the cartons are returned to the end of the packing line.

Breakdown of Division Contemplated—As a result of the success encountered in bulk storage, the company is contemplating the division of the order filling department into three sections: 1. Larger and bulk parts and the more popular and fast-moving items which lend themselves to palletization and use of the skeleton type rack; 2. less popular items which can be handled in bin cartons and steel shelving; 3. very slow moving items to be stocked in steel shelving in a more remote area.

Thorough analysis of stock movement has to be made in order to determine which parts are to go into each of the above areas and also how much space should be allocated to each part in each area. Here again space will be saved in the warehouse and materials handling costs reduced. At the same time it is expected that a more flexible condition will be established to accommodate the demand fluctuations which are prevalent in stocking automotive parts.

Atoms Weigh Moving Strip

Indication of any deviation in the thickness of strip or sheet material such as steel, tin plate, brass, aluminum, rubber, etc., may be measured by a beta ray continuous gage, developed by Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn. Noncontacting and therefore capable of measuring materials which are wet, sticky, highly polished or soft, the gage operates in conjunction with a standard meter and may be calibrated and is said to be accurate to as little as 1 per cent.

Essentially a weighing device, the weight per unit area of the moving strip is measured by passing a small beam of beta rays, which are actually high speed electrons, through the strip. Device may be calibrated in percentage of deviation weight per unit area or decimal dimensions.

With strontium 90 as the source material, range of the gage is from 5 to 150 ounces per square yard. With ruthenium 106, range is increased to 50 to 300 ounces per square yard. It is said that the gage may be used as a standard recorder if required and process control or alarm signal circuits may be installed to operate in conjunction with it. Normal throat depth of gaging head is 12 inches from center line of radioactive beam, but a two-piece gaging head with traverse mounting is available when it is desired to scan entire width of the sheet.

Cuts Pallet Repair Cost

If pallets were reinforced with steel strapping, the yearly cost of replacing, repairing and rebuilding would be considerably reduced, according to Signode Steel Strapping Co., Chicago. With bands of steel strapping tensioned over pallet top and around runners and stapled in place, several advantages are said to accrue: Nails are kept from pulling loose; splitting of boards at nails is prevented; boards are held tight to runners; pallets are kept rigid and free from distortion; strapped pallets last twice as long.

Helps Identify Metals

Method of identifying 13 different metals and alloys by appearance, spark test, chip test, and blowpipe test are explained in tabular form in a chart available from International Acetylene Association, New York. Intended to aid in the determination of correct oxyacetylene welding procedure, the chart includes data on the cast irons, low-carbon and high carbon steel, copper and aluminum and their alloys, nickel and lead.

Welding Library List

Containing information on published works on welding and contributing fields is Engineering Experiment Station circular 51, "Holdings in the A. F. Davis Welding Library," available from Ohio State University, Columbus 10, O. List of titles is not intended as a complete bibliography of the field, but has been compiled to assist corporations and individuals using the Davis Library or in building their own collections.

looking for the unusual in stainless strip steel?

Meet the THINSTEEL Man

The CMP stainless Thinsteel man is a character—an unusual character because he represents something unique in stainless strip. He's a salesman for a mill primarily interested in developing new applications for the 300 Series stainless grades in unusual sizes, finishes and physical properties.

This Thinsteel man is always on the lookout for inquiries involving fussy finishes, tight tolerances or tricky tensiles. He makes a business of doing the commercially impossible. He can offer you such uncommon products as 18-8 stainless in *dead soft temper, with a bright finish on both sides;* or strip with total gauge variation from edge to edge held to *less than 25% of standard;* — or strip *as thin as .001",* just to cite a few of the specialty products he likes to sell. If he sometimes appears over-enthusiastic, it's because he's really sold on his mill's ability to come up with the right answer to difficult and unusual problems and he knows that the organization behind him is equally interested in maintaining the CMP reputation for *the best in light-gauge stainless strip specialties.*

Your request for help in developing specifications to meet functional or fabricating problems will bring prompt and interested attention from the nearest Thinsteel representative.

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Phones: N. Y., COurtlandt 7-2427; N. J., UNionville 2-6900

PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: COlumbus 1-2700

Slab Slicer Eliminates Common Shear Troubles

No "Rube Goldberg" type parts are used in this German-developed cutter. Although it includes many innovations not found in any one shear on the market today, its mechanical operation is simple

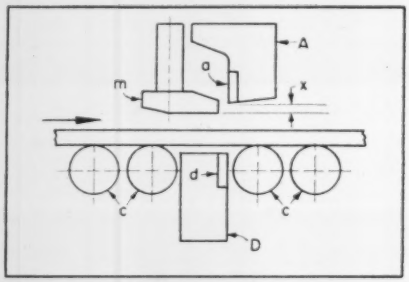


Fig. 1 — View showing upper knife slide of slab shear at its top position in relation to the hold-down gag

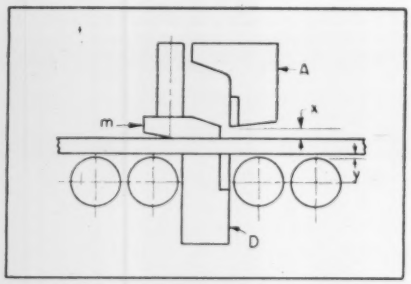


Fig. 2—Here top knife has descended, gag clamping slab firmly to bottom knife slide

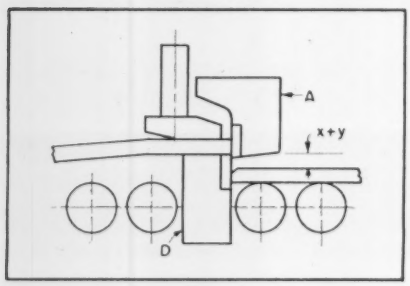


Fig. 3 — View showing knives meeting. Slab is always held perpendicular to shearing plane

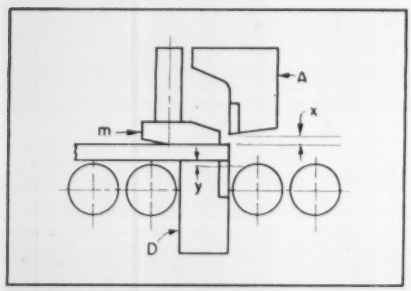


Fig. 4 — Uncut portion of slab here is shown returned to small distance above roller table

POSITIVE control of the slab, elimination of depressing table back of the shear, quick release of sheared slab portions and unobstructed access to the shear throat are some of the many advantages of a German-developed, open-side, up-and-down-cut slab shear currently in service at Rotary Electric Steel Co.

Although some of its features are found in standard shears, never before has a single shear incorporated so many innovations to eliminate disadvatanges of many different types of slab shears, and provide a combination of advantages which no one shear possesses.

The shear at Rotary Electric is of 700-ton capacity, capable of cutting 12 x 12-inch blooms, and slabs 40 inches wide by 3½ inches thick. It operates at the rate of 17 cuts per minute when slicing small slabs or blooms, and 7 cuts per minute when cutting larger sizes.

No Rube Goldberg Parts—Entire shearing operation takes place in one revolution of the main crank. The mechanical operation is relatively simple to minimize possibility of breakdown, and machine down time for repairs. Since the shear frame is subjected to compressive loads only, it is substantially immune to overload and frame breakdown from this cause.

E. C. Peterson, Birdsboro Steel Foundry & Machine Co., who revealed the existence of the new shear before a meeting of the Detroit section of the Association of Iron & Steel Engineers, pointed out that standard slab shears now on the market all have certain disadvantages. He says that an up cut shear, for example, produces severe shock and distortion on both approach and runout tables when the sheared slabs fall down on these tables after being lifted up to the knife.

A shear of the side-cut type takes up a lot of installation space, is not practical for wide slabs, and requires a special turn-up device, to turn the slabs on edge before shearing, and then return them back on their flat side. The down-cut shear will produce an oblique cut and deform the edge of the slab. The up-and-down-cut shear, developed to eliminate the depressing table, overcomes the disadvantages of the up-cut and side-cut shears, but runs into troubles of its own.

Operator at Disadvantage—In addition, he states, conventional up-and-down cut shears, as well as the other types of shears mentioned, are designed so the throat where the cutting action takes place is enclosed on both sides by the shear frame. This, of course, makes it hard for the operator to see to spot the slab to shear crops, and it also makes it hard to remove slivers which may become lodged in the shear throat or crops too short to be removed by the table mechanism. Further, it hinders the inspection, changing, and setting of the shear knives.

Standard hot shears, of whatever design, are subject to overload, due to the introduction of oversize or cold material. Conventional overload devices, such as shear pins, are not completely protective.

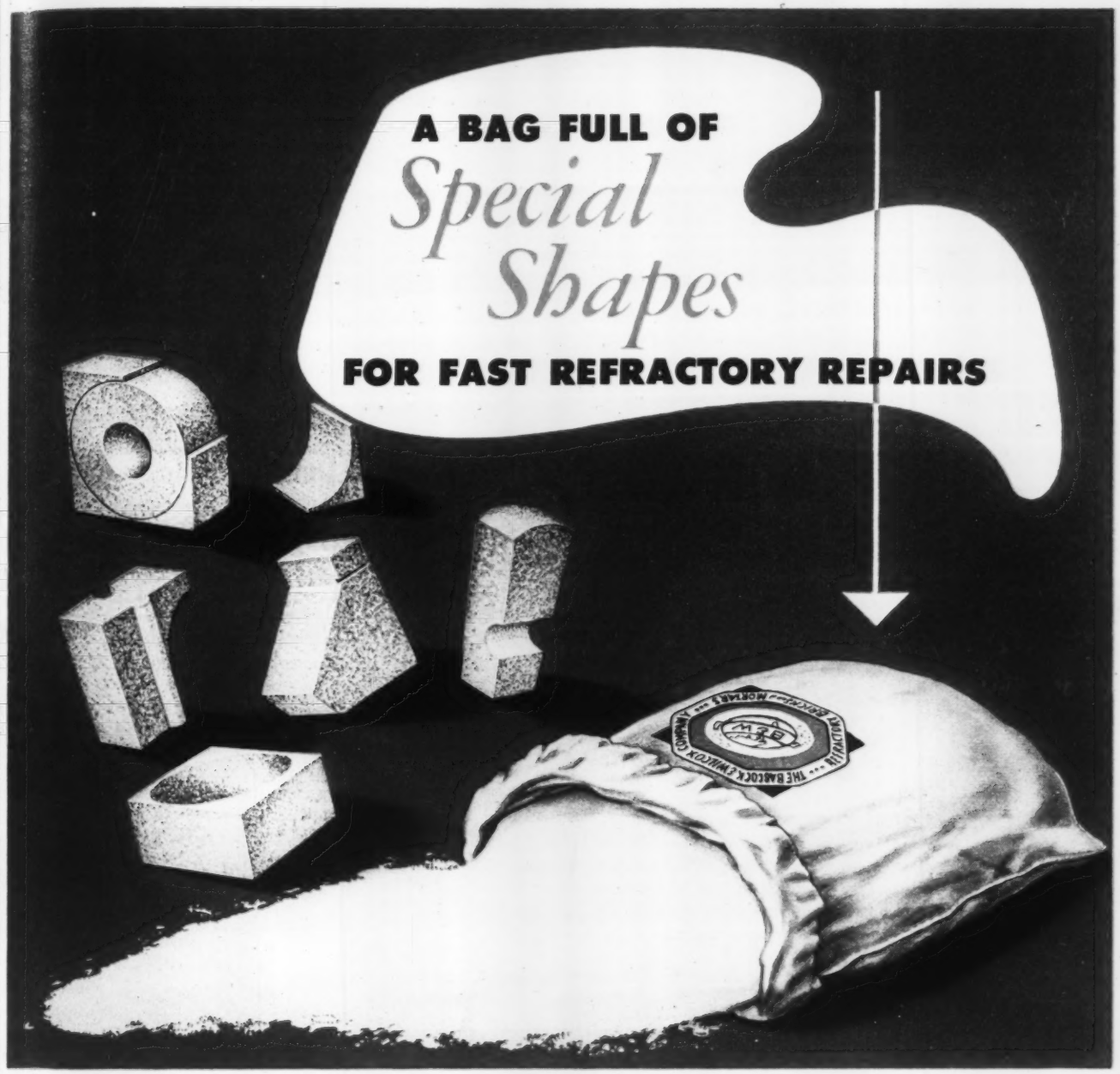
Most of these faults are overcome in the shear developed by Sack Machinery Co. of Dusseldorf, Germany, and which is now manufactured in this country by the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. Here's how it works to eliminate many common shear troubles.

With the slab in place for cutting, the lower knife slide is retracted slightly below the level of the roller tables, to facilitate movement of the incoming slab. The upper knife slide is at its top position, with a heavy hold-down gag a short and always constant distance below it. (Fig. 1).

Protects the Rollers—At initiation of the shearing cycle, the bottom knife slide rises a small distance in order to lift the slab a slight distance Y off the table rollers and keep any weight of the cutting action from contact with the rollers.

In Fig. 2 the top knife slide A, with the hold down gag M always leading it by the distance X, has descended to the point shown, at which point the gag clamps the slab firmly to the bottom knife slide D. Now the gag and the bottom knife slide, carrying the slab between them, start to move upwards while the top knife remains stationary.

Cut Always Square—This upward movement continues until the slab reaches the top knife slide, the knives meet, and the cut is made, Fig. 3. The bottom knife slide and gag always rise up to the point where the knife blades close, regardless of the thickness of the slab. The slab, being firmly clamped between



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the hold-down gag and the bottom shear slide, is always held perpendicular to the shearing plane, and the cut is clean and square. Deformation of the edge of the bar, as well as an oblique cut, are eliminated.

At this point the sheared-off portion of the slab has clearance of a small fraction of an inch (the distance X plus Y) between the top knife and the roller table, and is free. It can be carried away immediately by the roller table. This makes it possible for the uncut slab to be fed forward immediately after the shear knives are open. Time is gained in clearing the shear gage.

In Fig. 4 the bottom knife slide and gag have returned the uncut portion of the slab to the small distance Y above the roller table, at the same time removing any slight bend which may be put in it during the cutting stroke. At this point, the gag releases the slab, the bottom knife slide returns to its position below the lower table rollers, and the unsheared portion of the slab is fed forward into the shear.

The shear is driven by variable voltage direct current motors. These start and stop for each cycle. The drive has a clutch device incorporating two different reduction ratios.

Accurate to 0.00005-Inch

Utilizing two cutters, one for roughing and one for finishing, a Swiss automatic wheel, pinion and segment cutting machine, for parts ranging from 0.04 to 2.0 inches in diameter, is said to be capable of holding work to 0.00005 to 0.0001-inch, depending upon material and job requirements.

Available in this country from Hauser Machine Tool Corp., New York, it has an automatic feed magazine as standard equipment which is easily set up or removed for hand feeding. Machine is made by Safag S. A. Bienne, Switzerland.

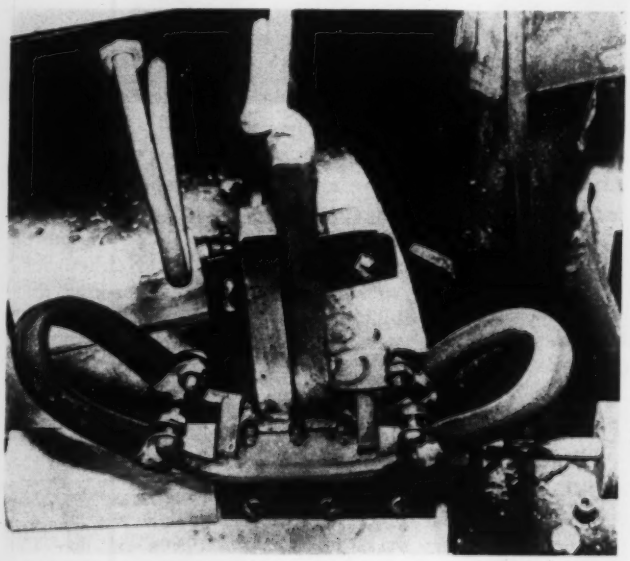
STAMPED steel roll backs are fluxed and assembled by operator with tiny square of brazing alloy placed between teeth of the roll backs. After placing three assemblies in each jig, the machine takes over. First, an air cylinder plunger shoots forward, clamping assemblies in the jig

Want to Double Your Brazing Operation?

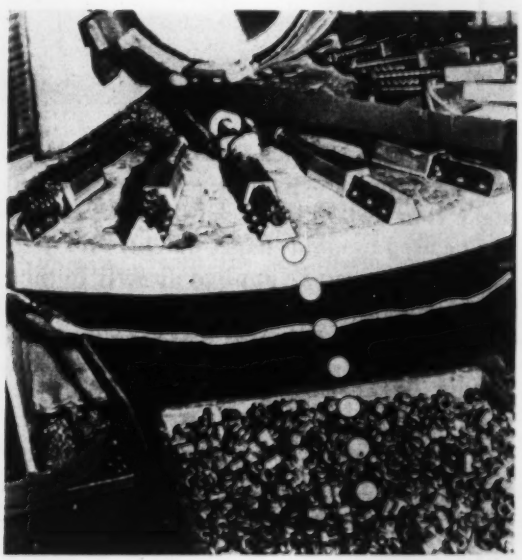
IF YOU are interested in volume silver alloy brazing, and want to cut costs yet still increase output, take a look at this setup.

It was responsible for lopping off by one third, cost of producing 500,000 roll backs for door locks. By adding a second heating station and another operator to the present indexing table, it can be made to double production and cut costs still further.

Setup is typical example of almost complete mechanization, by parts positioning through jigging arrangements, by preplacing the silver brazing alloy in wire ring or other prefabricated form, reports Handy & Harman, New York.



MOVABLE induction heating coil then positions itself for 9-second heat application. Coil goes up and assemblies ride clear of two stations while brazing alloy is setting



FINALLY, a second air cylinder plunger ejects the finished assemblies from the indexing table into a convenient shipping crate

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Today when slow process methods add so much to product cost . . . actually, lessen chances for profit, *it would pay to consider metal stampings.* The LEAKE staff has gained the reputation for being "tops" in engineering design. They really plan a job to capture all the advantages of the stamped metal process.

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PRESS CAPACITIES:

Up to 2500 tons . . . Up to 66 in. stroke . . . Up to 72-in. x 150-in. bed area . . . Mechanical or hydraulic . . . Single, double, or triple action.

MATERIALS:

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EXPERTS IN PRESSED METAL

COMPLETE PRESSROOM—MACHINE SHOP
HEAT TREAT—BRAZING—WELDING
TESTING AND INSPECTION

Cylindrical Parts

(*Concluded from Page 95*)

stop for any reason, and the radio-frequency power not be cut off immediately, the shaft in the coil would melt and jam the machine.

Brass Dummy Shafts Used—With the control switch mechanism at the discharge end of the scanner, it is necessary that a continuous line of shafts be run through before the generator power and timing circuits function properly. To achieve this, several brass dummy shafts, easily distinguishable from steel, can be used to fill the loader magazine partially before starting a production run. After passing through the scanner, they can be placed in a special dummy chute located below the magazine for steel shafts. Part of this chute is counter-weighted so that at the end of a production run these dummies automatically pass through the scanner and insure proper driving force to clear the machine of steel shafts.

To simplify the set-up operation for changing from one shaft to another, the proper timing circuits can be automatically selected by the operator when electrical connections between any given magazine and the timers are made. Each magazine has an electrical plug attached to a chain which, when inserted in the control circuit socket of the control timers, only makes connection with the desired timers to key the generator at the proper time.

Standard for Copper Tube

Cast brass solder-joint fittings to be used with copper water tube are the subject of a new standard, B16.18-1950, announced by American Standards Association, New York. Developed for use primarily with plumbing equipment, the new standard recognizes the fact that this type of fitting is now seeing other uses.

Included are pressure ratings, abbreviations for end connections, sizes and method of designating openings of reducing fittings, marking, minimum requirements for material, dimensions and tolerances and tests.

Heat Resistant Alloy Combines Exceptional Ductility with Good Creep Strength

Considerable experience and data are now available on a cast heat resistant alloy of the 21 per cent chromium; 9 per cent nickel type, Alloy Casting Institute Type HF. With proper analysis control, properties shown in the accompanying illustration can be achieved with consistency.

Made by the Electro-Alloys Division, American Brake Shoe Co., New York, the material combines an exceptional degree of ductility with good creep strength. Its creep resistant properties are comparable to the popular 25 per cent chromium, 12 per cent nickel cast grade and its ductility after aging is reported to be greatly superior. Temperature range to which it is applicable includes 1200 to 1600° F.

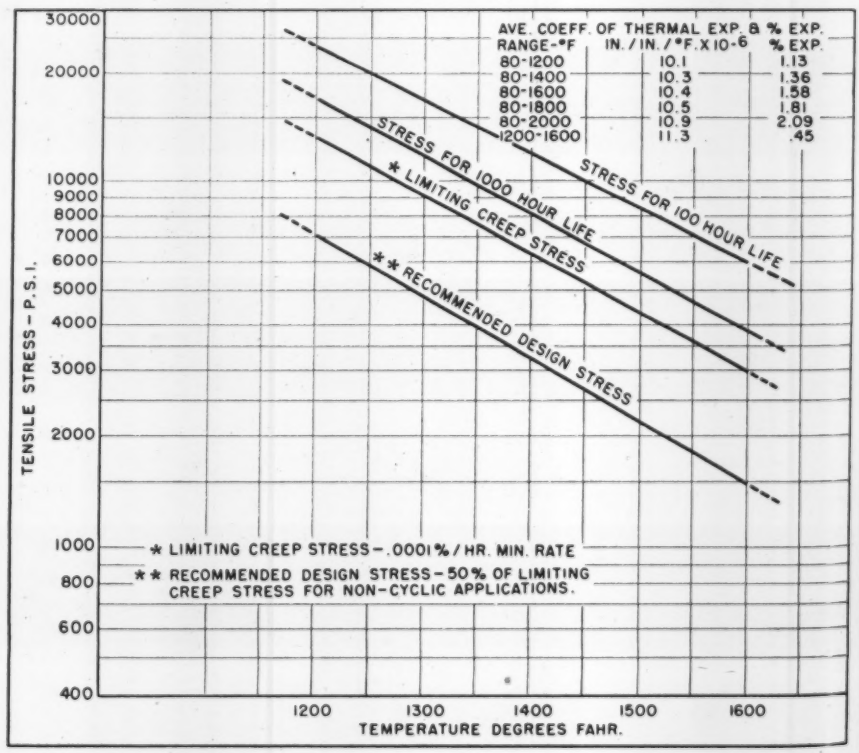
Applications of the so-called Thermalloy 30 include furnace parts of all types including annealing supports, trays, fixtures, rails and chain, kiln alloy parts, oil refinery catalytic unit castings and a wide range of miscellaneous applications.

Foundry handling characteristics are comparable to the 25 per cent chromium; 12 per cent nickel type. Electro-Alloys engineers say weldability is excellent and, except for tapping operations, machinability is satisfactory.

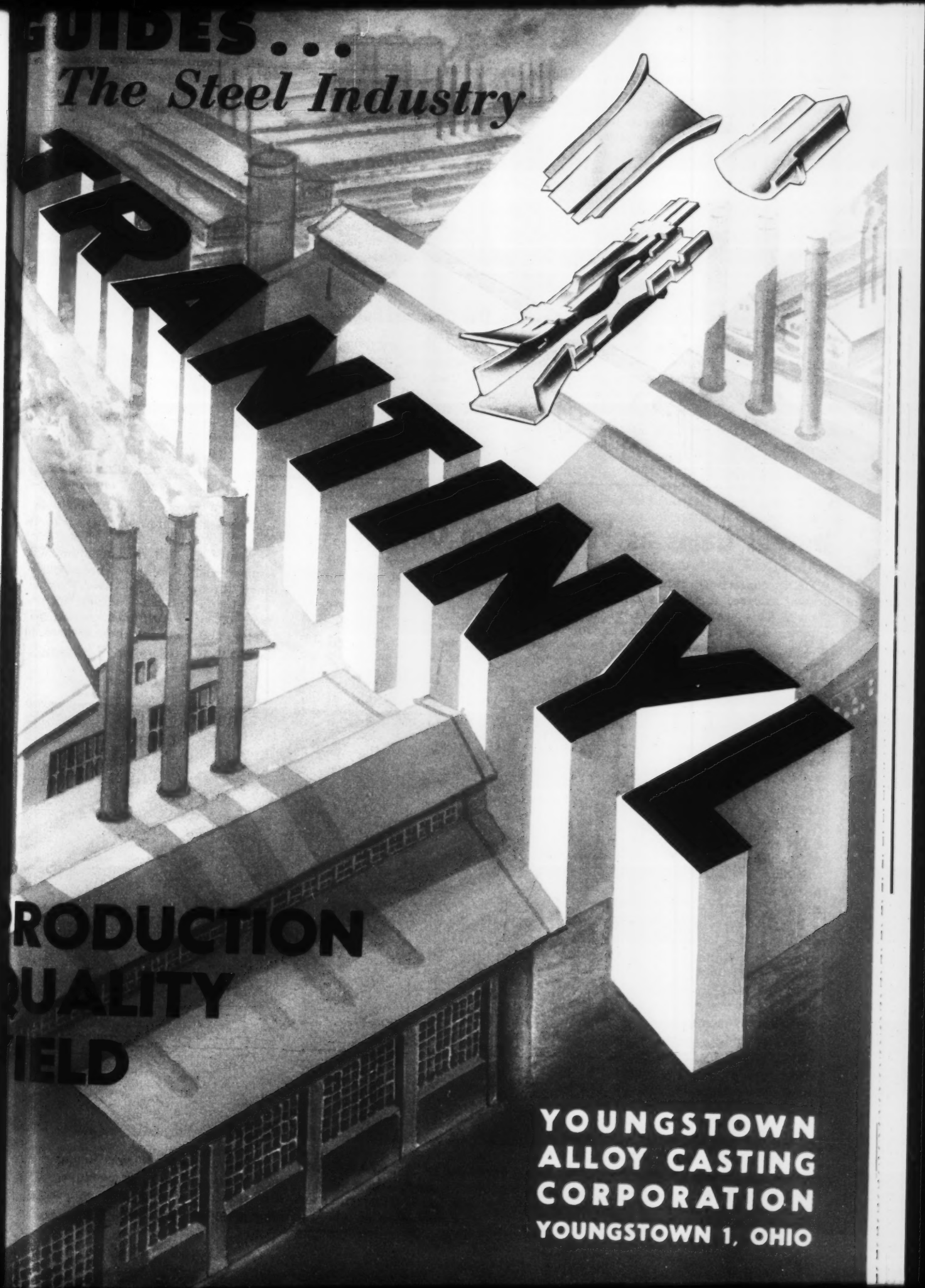
On a recent large order for oil refinery castings to operate at 1400°F, involving approximately 100 heats, a stress rupture requirement of 15,000 psi for 20 hours has been exceeded consistently together with an average aged tensile elongation of 26.5 per cent.

ROOM TEMPERATURE MECHANICAL PROPERTIES

Heat Treatment ° F Hrs. Cooling	Yield Str. .2% P.S.I.	Ult. Tens. Str. P.S.I.	Elong-2" %	Red. Area %	Hardness BHN
As Cast	41000	73000	32	38	160
	50000	93000	43	39	173
1400-24-Fce. Cool	50000	97000	18	19	176
	57000	110000	35	34	210



Elevated temperature properties, 21% chromium, 9% nickel heat resistant alloy, austenite grade, 0.34% carbon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Stainless Work-Hardens Slowly

Does the stainless steel you are now using work-harden too rapidly? Do any of your stainless applications require severe deforming, bending or upsetting? Alloy Tube Division of Carpenter Steel Co., Union, N. J., is making available a new stainless steel which work-hardens slower than other chrome nickel steels and which will take severe cold forming.

Analysis of the new material, known as No. 10 tube, is carbon 0.08 maximum, chromium 16.0 per cent, nickel 18.0 per cent. The company states that this material performs satisfactorily on all tubular parts requiring severe forming, bending, spinning, coining, extruding and upsetting. It may be brazed or soldered.

Said to be useful for parts that must remain nonmagnetic after severe cold working, the new stainless has a permeability of about 1.002 after a 50 percent reduction with a field of 200 Oersteds, and about 1.018 after a 80 per cent reduction. As for corrosion resistance, the No. 10 stainless is said to be slightly better than types 304 and 305, resisting a wide variety of organic and inorganic chemicals. Nitric acid is resisted well and sulphuric acid moderately. Round tubing is available in all sizes and standard gages up to 1⅝ inches OD and in shapes whose equivalent round will not exceed that figure.

Savings: Two Days and Dollars

Many railroad cars surviving the bombing of European rail centers look no worse than gondola cars used for hauling scrap and hot slabs in this country's steel mills. Suffering considerable damage from this hard usage, the car sides are bent by cranes, shovel dippers and the heavy scrap dropped into them.

Repair of these damaged cars previously required about four to five days per car, until one steel mill was able to accomplish the same results in half the time and at considerable savings in cost. Using an Oxweld W-26 blowpipe, equipped with a special multiflame heating head to heat the bent portion of the car, the bent sections were forced back into shape by means of a jack.

With this oxy-acetylene heating method, it is said that a car is reconditioned and put back into service in only two days, dollar savings amounting to about $250 per car.

Electrodes Described

Available from Welding Equipment & Supply Co., Detroit, is a 56-page catalog describing Eureka tool and die welding electrodes.

Output Gains as "Bends" Go Out

WHEN nonferrous tubing is cold drawn to size, it takes a "set" or "bow". This wave or bend in the tubing, after the last draw, can amount to 3 or 4 inches in a 14-foot length.

Deforming the tubing back to perfect straightness—to eliminate whipping action in machining, or to assure one tube fitting inside another perfectly—as in a telescopic car antenna—was the problem faced by Precision Tube Co. Inc., Philadelphia. That is, it was a problem until installation of a rotary straightener developed by Mackintosh-Hemphill Co.

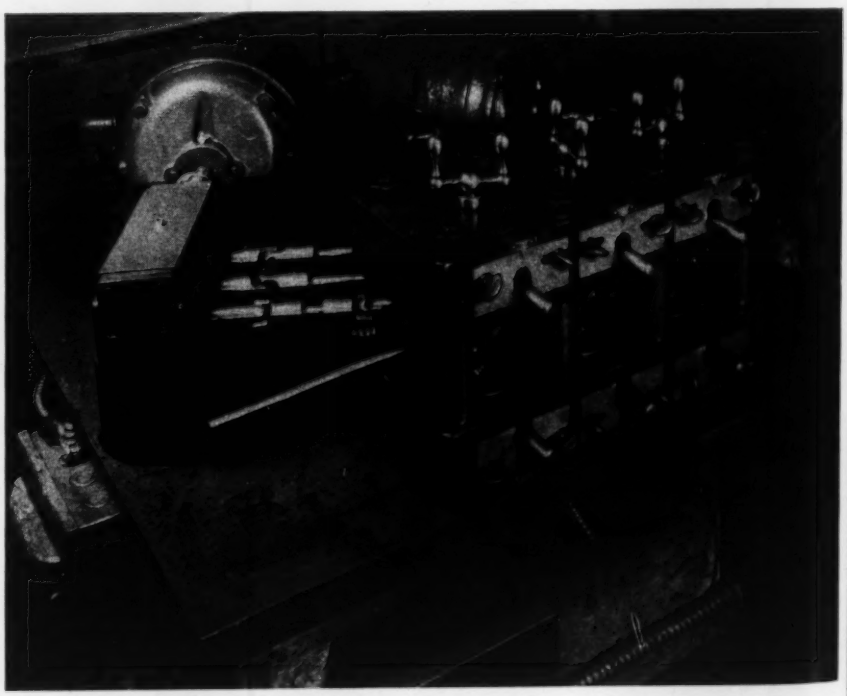
Unexpected Bonus—Today, instead of having a problem, the company is enjoying a 30 per cent increase in production so far as nonferrous small seamless output is concerned.

Precision uses the new straightener on tubing ranging in sizes from 7/32 to ½-inch. While maximum volume through the rotary unit in eight hours is 34,000 feet, the redraw house averages 25,000 feet of tubing through the machine e[illegible]ift.

Straightenin[illegible]peration itself is accomplished by bending the tube above the metal's yield strength in order to overcome the set, and to obtain a permanent deformation to perfect straightness. Thus passing the tubing between three sets of crossed rolls of the straightener actually moves the grains in the tube structure thus equalizing existing stresses.

Betters the Product—The method, Precision reports, actually adds a certain controllable amount of cold work that tends to increase hardness and tensile strength of the metal. Tubing processed between the straightener's six crossed rolls are in standard 12-foot lengths. Since run-out tables are nearly 50 feet long, the plant can, and does straighten lengths up to 45 feet.

Tubing handled include aluminum, copper, yellow and red brass, phosphor bronze, nickel-silver, nickel, Monel and Inconel—ranging in size from 0.500 to 0.010-inch outside diameter, and wall thicknesses down to 0.0015-inch.



Bends out of some 25,000 feet of nonferrous small seamless tubing are eliminated each 8-hour shift by this rotary straightener employed by Precision Tube. Note three sets of crossed rolls that provide permanent deformation of tubing to bring about perfect straightness

Humidity Hurts Grinding Wheels

Grinding wheels and human beings have something in common—both are extremely susceptible to changes in humidity.

A series of moisture tests conducted by Chicago Wheel & Mfg. Co., Chicago, bears out this statement. Cut-off wheels, used by the metalworking trades for high speed cutting of pipe and tubing, are affected by exposure to moisture, the bonding post holding the abrasive particles to the wheel loosening its hold on the abrasive as the moisture goes to work.

Working with a package manufacturer, Rhinelander Paper Co., Rhinelander, Wis., the Chicago company felt the need for a grinding wheel package with a barrier insuring longer wheel life, faster cutting and less breakage. After a series of tests using glassine, heat-sealed envelope containing sample cut-off wheels, it was determined that moisture pick-up for coarse grade samples was decreased 29 per cent and fine grain samples by 17 per cent through the use of these containers, over unpackaged products. As a result, wheels made by the company are being packaged in this type of container and may be stocked indefinitely without loss of cutting efficiency, it is reported.

Diamond Powder Standard

Printed copies of commercial standard CS123-49, grading of diamond powder, are available from Government Printing Office, Washington 25, D. C., according to Commodity Standards Division, National Bureau of Standards. Now in its second edition, it covers material, size designations, average particle size and size ranges, impurities, methods of sampling and inspection and method of indicating compliance with the standard.

Eye Program Goes to Shell

Institution of an eye conservation program at Shell Pipe Line Corp., has resulted in an 82 per cent reduction in the cost of eye injuries. According to American Optical Co., Southbridge, Mass., the Houston, Texas, company, which employs 1200 workers, spent only $958 in 1949 for safety goggles and eye injuries, as compared with $5249 in 1949 before the program was adopted.

Program consists of a vision check of employees to ascertain whether they needed a complete eye examination and correction and the supplying of safety goggles to workers on eye-hazardous jobs. Those workers with deficient vision receive prescription goggles which both correct and protect their vision. It was found in the vision check that nearly 200 of the 1200 workers had poor eyesight and needed vision correction.

Oven in the Sky

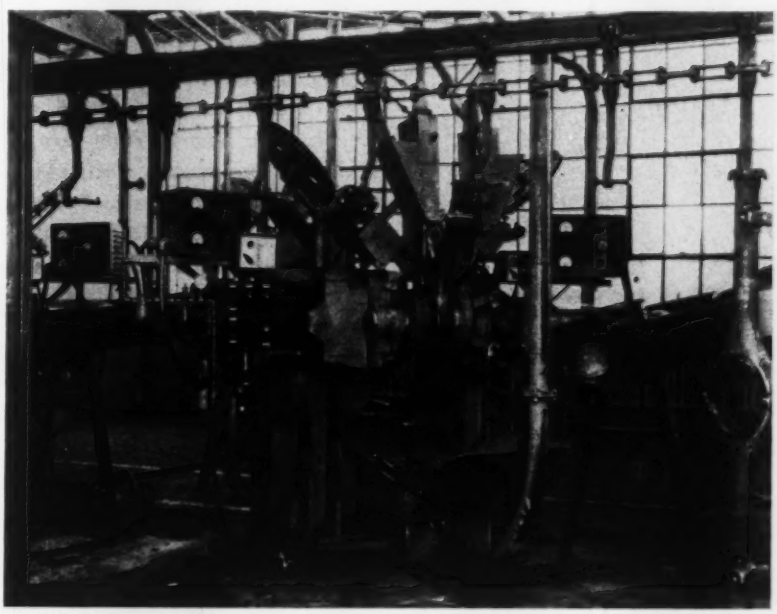
A visitor in the gasoline engine manufacturing plant of McCulloch Motors Corp., Los Angeles, would find it difficult to locate an electric radiant oven—unless he looked about 12 feet above the floor. Used to provide rapid curing action and a hard, true color to synthetic enamel sprayed on the engines, this all-metal oven, which is conveyorized, requires no floor space.

For maximum drying speed at the proper temperatures, three zones of heat are provided in the oven, made up of three 4-foot sections of Chromalox electric radiant heaters, made by Edwin L. Wiegand Co., Pittsburgh. First section is operated at full intensity for high initial heat and brings the material very rapidly to the best drying temperature. Heat tapers off in the last two sections through the use of contactors and input controllers which maintain exact baking temperatures. The heaters in these two sections usually operate at 50 and 25 per cent, respectively, of full capacity; however, in humid atmospheres, operation at as much as 90 per cent of capacity is sometimes required.

Clearance inside the oven is 26 inches, said to be sufficient to handle two sizes of engines weighing 17 and 37 pounds, which rotate as they pass through. Conveyor speed is constant at about 5½ fpm. As most of the volatiles have evaporated between spray booth and oven, provision is made for natural convection of air through the oven top.

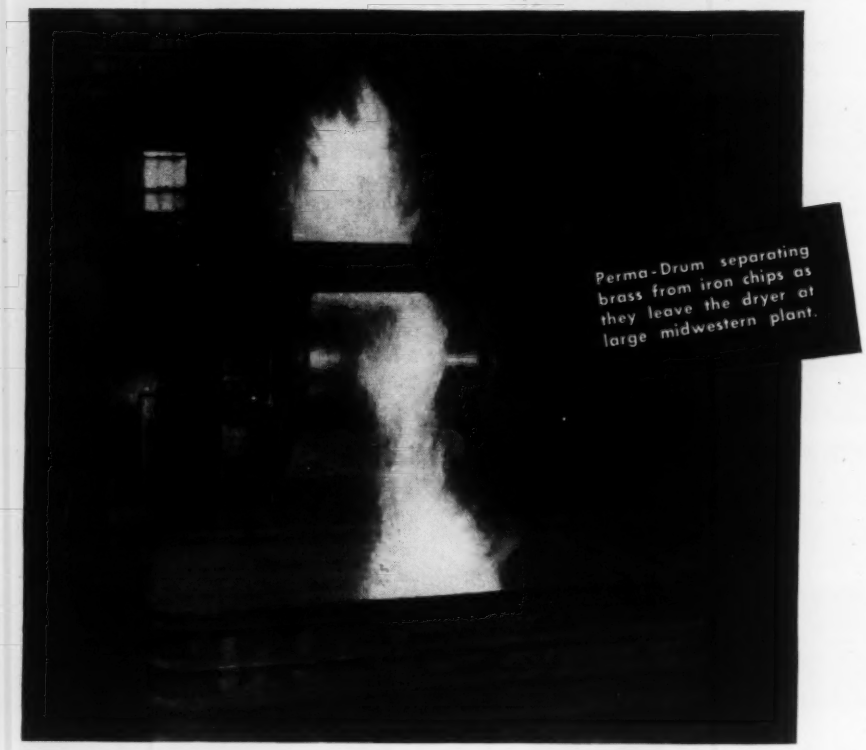
Safe Rules for Disk Grinding

Safe handling, storage, mounting and use for abrasive disks used in disk grinding are described in a booklet published by Grinding Wheel Institute, Greendale, Mass. The 18-page illustrated booklet has sections devoted to methods of mounting, steel disk wheels, abrasive disks, mounting screws and studs, mounting procedure, storage care in handling, speeds and protection devices.



2½ MILES OF WELD: By making two 33-inch circumferential welds at a speed of 75 inches per minute, this hidden arc welding setup allows six men to deposit 2½ miles of weld in eight hours. Six automatic welding stations, each equipped with two standard automatic heads made by Lincoln Electric Co., Cleveland, simultaneously weld the ring and cover to the formed axle housing body. Average production is 50 pieces per hour. The housings, to which rings have been tack welded, are carried to stations by overhead conveyor. Operator positions housing in the machine, places a cover and starts the pushbutton controlled welding cycle. A mechanized flux recovery unit reconditions the flux for reuse and delivers it to hoppers over the work

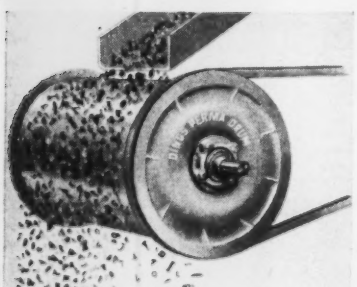
To Cut Your Scrap Separation Costs



Perma-Drum separating brass from iron chips as they leave the dryer at large midwestern plant.

The New Dings Non-Electric PERMA-DRUM!

Trade Mark Reg. U. S. Pat. Off.



Non-magnetic material flows over revolving drum shell in normal trajectory. Magnetic materials are held fast to shell until carried beyond the magnetic field, at which point they are separately discharged.

Perma-Drums are also available in completely enclosed housings with gear head motor drive.

HERE IS fully automatic trouble-free separation of ferrous and non-ferrous scrap. The new non-electric, self-energized, permanent, Alnico Perma-Drum is more powerful than the old electromagnetic drums. Armor plate drum shell assures long life. Heat or moisture can't hurt the unit. *Magnetic strength is certified* and *magnetic permanence is guaranteed* for the life of the unit. Dollar for dollar you can't beat the new Perma-Drum.

For complete information, send for CATALOG C-1100A.

DINGS MAGNETIC SEPARATOR CO.
4710 W. Electric Ave.
Milwaukee 14, Wis.

Dings MAGNETIC SEPARATION HIGH INTENSITY
Reg. U.S. Pat. Off.

Steep Rock Iron Ore

(*Concluded from Page* 93)

tons a year will be produced. This is over and above the output of the Errington mine—the B ore body.

Underground Mining Eventually—because of the very nature of the Steep Rock ore deposits—after extensive open pit operations are completed—mining will become fundamentally an underground operation and by use of the shaft presently being sunk at the B property, a capacity of approximately 1,500,000 tons annually will be available from this body. Operators expect the first ore to come out of the vertical shaft operation during the fall of 1952.

At Steep Rock, the seven spring and summer months are utilized for mining and during the winter the majority of the waste stripping is done. When the property is converted to underground mining operation, year-round production will be possible with the ore being stock piled on the property during the winter months when shipping on the Great Lakes is curtailed.

Sequence of mining operations at Steep Rock lake are as follows: Ore and waste material is broken with 9-inch vertical churn-drilled holes and mined in 30-foot lifts. Broken ore is loaded from the mining faces with 4 cubic yard electric shovels and dumped into 22-ton diesel trucks. It is then hauled 4000 feet up 400 feet vertically on 8 per cent graded roads to the loading terminal at which point the ore is passed through a crusher and belt conveyed to the top of the loading terminal where it is screened and separated into coarse open hearth feed and finer blast furnace ores. From there material passes into large storage hopper bins and is subsequently released by gravity into standard 50-ton bottom-dump railroad ore cars, and shipped 140 miles to Port Arthur where the ore loading docks are located.

Contains Lighting Specifications

Detailed specifications for 18 different fluorescent and incandescent industrial lighting units are included in a 44-page booklet, "RLM Standard Specifications for Industrial Lighting Units," available from RLM Standards Institute, Chicago. Four new specifications deal with industrial lighting units utilizing the new T-12 slimline fluorescent lamps.

Specifications cover materials, shielding angle, reflector dimensions and contour, effeciency, auxiliary control equipment, ballast temperatures and national electric code require-

ments, among others. Among the revisions is one to increase the mean reflection factor on 12 different units from 79 to 82 per cent.

Short Runs a la Mass Production

Where short runs must be produced on a mass production basis, International Harvester Co., Chicago, is taking advantage of the quick die changing features of a 425-ton self-contained hydraulic press built by Hydraulic Press Mfg. Co., Mount Gilead, O. The press, used for deep drawing and forming of tractor and other farm machinery parts, has ample clearance.

The self-contained machine is of the single action type with a 133-ton die cushion installed in the bed. It has a 24-inch stroke and a pressing surface of 48 x 60 inches. Press is operated by a closed circuit hydraulic system which is said to provide a fast cycle, constant drawing speed, smooth operation, shockless reversal and protection from overload.

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Aug. 23-31, American Mining Congress: 1950 Metal Mining Convention and Exposition, Salt Lake City, Utah. Headquarters of AMC: Ring Bldg., Washington 6, D. C.

Sept. 5-9, American Chemical Society: National Chemical Exposition, Chicago Coliseum. Sponsored by Chicago Sections, ACS, 86 E. Randolph St., Chicago 1.

Sept. 11, Society of Automotive Engineers: Tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

Sept. 11, Society of Automotive Engineers: Aeronautical meeting and aircraft engineering display, in Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Sept. 13-15, Porcelain Enamel Institute: Twelfth Annual Forum, University of Illinois, Urbana, Ill. Institute is located at 1010 Vermont Ave., N. W., Washington 5, D. C.

Sept. 13-16, National Association of Foremen: 27th annual convention, Statler Hotel, Buffalo, N. Y. Association headquarters: 321 W. First St., Dayton 2, O.

Sept. 18-22, Instrument Society of America: Instrument conference and exhibit, Memorial Auditorium, Buffalo, N. Y. Society headquarters are at 921 Ridge Ave., Pittsburgh 12.

Sept. 19-21, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Worcester, Mass. Society headquarters at 29 W. 39th St., New York 18.

Sept. 23-26, Packaging Machinery Manufacturers Institute: 18th annual meeting. The Homestead, Hot Springs, Va. 342 Madison Ave., New York 17, is address of institute.

†**Oct. 2-6, Gas Appliance Manufacturers Association:** Biennial exposition, Convention Hall, Atlantic City, N. J. Association headquarters: 60 E. 42nd St., New York 17.

†**Oct. 5-6, American Foundrymen's Society:** Regional conference Plaza Hotel, San Antonio, Tex. Sponsored by Texas chapter, AFS, with headquarters at 5210 Canal, Houston.

†**Oct. 5-6, Porcelain Enamel Institute:** 4th annual sales and management conference, Hotel Cleveland, Cleveland. Institute headquarters: 1010 Vermont Ave. N. W., Washington 5, D. C.

What *Forgings* have that offer so many more economic, engineering and production advantages than can be obtained with any other material, is illustrated and described in this REFERENCE BOOK on forgings.

Write for a copy. Then consult a forging engineer about how you can obtain the correct combination of mechanical qualities in forgings for your particular type of equipment.

DROP FORGING ASSOCIATION
605 HANNA BUILDING
CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality—How Hot Working Improves Properties of Metal", 1949 Edition.

Name.....

Position.....

Company.....

Address.....

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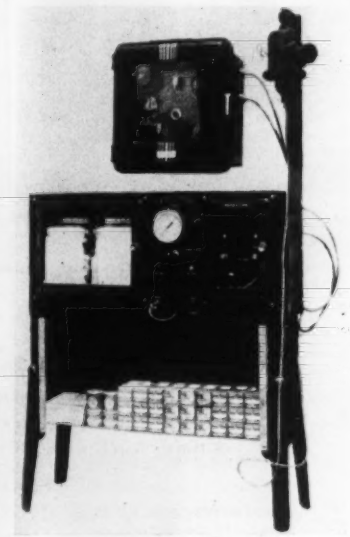
'Surface' SERVES THE STEEL INDUSTRY

New Products and Equipment

Operates Bessemers Accurately

Enabling the operator to definitely determine silicon, manganese and carbon periods and forewarning him of impending manganese boils which reduce loss of metal and time, is an electronic flame control instrument made by Whiting Corp., Harvey, Ill.

It makes possible operation of Bessemer converters with high technical

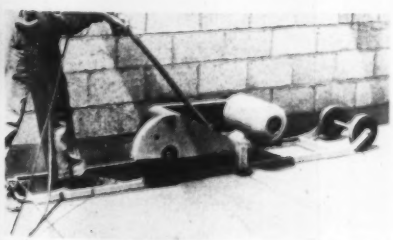


accuracy in determining end point and controlling the carbon. Excessive iron oxide is eliminated. Dual speed chart recorders give permanent records of air and flame characteristics, making possible duplication of blows. It is applicable to side blow or bottom blow converters.

Check No. 1 on Reply Card for more Details

Saws Concrete

Capable of cutting concrete, either by wet or dry cutting, is the Creeper concrete saw, made by Martin Fireproofing Corp., 2200 Military Rd., Buffalo 17, N. Y. Supplied with guide



rails, it cuts a straight, clean cut, and tends to eliminate cutting blade breakage.

For dry cutting, abrasive blades are provided; specially bonded abrasive or diamond blades are for wet cutting. All working parts are shielded by heavy gage sheet steel. Unit is so balanced that all weight rests forward on semipneumatic tires for moving from job to job. Use may be for cutting channels in floors for machine foundations, or for doors or skylights.

Check No. 2 on Reply Card for more Details

Pump Mounting Simplified

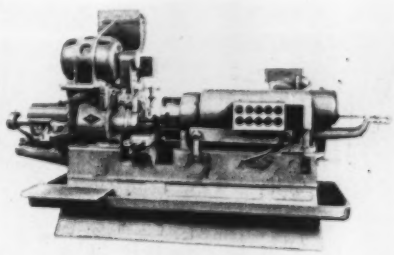
Impeller housing, spacer supports, mounting flange and lower motor end bell are one casting on the model 6 P3 Gusher machine tool coolant pump offered by Ruthman Machinery Co., Cincinnati 2, O. One of the spacer supports is cored to provide the discharge passage from the pump through the plate flange. This arrangement simplifies mounting in tank and machine bed plates by eliminating the piping within the reservoir.

The driving motor is 1/10 hp, 3450 rpm and is equipped with permanently lubricated ball bearings. One piece shaft extends through entire length of the unit. Rotating assembly is dynamically balanced by an electronic process. Pump is also available installed in a standard portable tank.

Check No. 3 on Reply Card for more Details

Screw Machine Improved

Incorporation of an electric feed drive on 3¾ and 5¾-inch model A single spindle automatics, made by Cleveland Automatic Machine Co., Cincinnati 12, O., makes possible separate and infinitely adjustable feeds



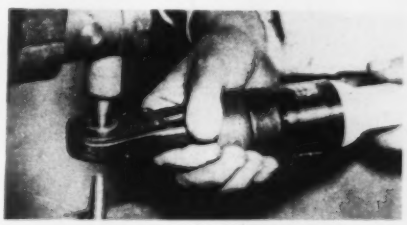
which may be preselected for forward and return motion of each of the five turret stations. A motor generator set provides direct current for feed control motor and also drives the idle motion of the machine.

When spindle speeds have been set and the desired rate of feed for each tool determined, operator obtains proper dial setting for each rheostat from a feed chart. Rotary selector switch automatically cuts-in the proper rheostat for each tool station as it comes to working position, and the speed of the direct current feed motor is automatically changed to provide the preselected feed. Rate of feed of any tool can be changed while it is cutting. Chucking mechanism works the maximum number of pieces from the bar stock and handles slight irregularities in stock. All shafts, gears and bearings are built to absorb the shock load of the heaviest cuts. The main drive is provided by a 15 hp 4-speed motor.

Check No. 4 on Reply Card for more Details

Air-Powered Electrode Dresser

Round electrodes of single or multiple-point welding machines may be redressed by an air powered electrode dresser, built by Keller Tool Co., Grand Haven, Mich. Tool combines functions of both angle and thin-type



dressers and is designed to restore their original shape without removal from the welding machine.

Cutter attachment of ¾-inch thickness accommodates close-tolerance jobs. Both Porter and Severance type cutters can be used. Cutting action is proveded by a free speed of 1750 rpm. Overall length of the tool is 12¾ inches. Weight is 4½ pounds.

Check No. 5 on Reply Card for more Details

Accurate Flame Cutting

Operating on the principle of the pantograph and assuring accurately cut patterns devoid of ragged edges is the Star torch holder for contour flame cutting and butt welding, offered by Krohn Mfg. & Supply Co., Centreville, Mich. Eye strain is lessened as the operator is stationed several feet from the flame. By substituting a welding torch for the cutting torch, light materials may be butt welded.

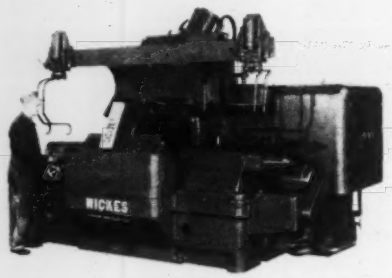
Circles or rings up to 24 inches diameter or a straight cut 52 inches long may be made, along with squares and combinations of curves and angles. Adjustable templates or form duplicators are furnished with the

machine; others may be cut from light metal. Torch holding arm is adjustable to fit various types of hand and machine torches. Work-piece stand is adjustable for different thicknesses of steel. Heart-shaped operating table may be attached to either right or left end of the machine. Two models adaptable for either hand or machine type torches are available.

Check No. 6 on Reply Card for more Details

Rough and Finish Turns

All crankshaft main line bearings and ends may be rough and finish turned simultaneously by the model CF-4 center drive crankshaft lathe developed by Wickes Brothers Division, Wickes Corp., Saginaw, Mich. Machine incorporates three sets of cross slides which surround the crankshaft with cutting tools. Front and rear cross slides carry rough turning tools and divide tool load on crankshaft during the cheeking, rough turning and filleting operation.



A third massive slide approaches crankshaft from the top with finishing tools, following a few thousandths behind the rough turning tools. Lathe has hydraulically operated tailstock, live centers and an electric power operated chuck controlled by push button on the control panel. Cycle is completely automatic. Production depends upon the type of crankshaft and stock to be removed.

Check No. 7 on Reply Card for more Details

Mounts Up to Six Units

Up to six size 1 or 2 starters may be mounted in a standard vertical section measuring 20 x 90 inches in a control center designed by Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. Featuring plug-in units and new safety handle mechanisms, the units are able to accommodate control for a greater number of motors in the same space.

Plug-in units have positive pressure stabs which grip round vertical busses. Safety handle mechanism provides for as many as four padlocks to lock both door and disconnect in either off or on position. Circuit breakers are type ML thermal magnet type. Starters incorporate NEMA standard mounting dimensions and wiring schemes.

Check No. 8 on Reply Card for more Details

Provides Grinding Flexibility

Grinding of spiral and end mills, keyway and angular cutters, saw blades, etc., is given additional flexibility by adjustable work head de-

For outstanding production economy

KRW HYDRAULIC PRESSES ENGINEERED FOR PLUS-PROFITS

Operational efficiency to chisel in on tough competition! Priced for terrific economy — quality that keeps on multiplying profits long after cost has been amortized.

KRW Presses fabricated of steel for maximum strength, minimum weight and space conservation. No excavations or elaborate foundations required.

Low Price Gets High Priced Features

Two Cylinder Type
Tons capacity 60 85 100. Platen and bolster, maximum usable size, F to B, R to L, 36" x 60". Stroke 6" 11". Bed, fixed.
Controls: Manual, Semi-Automatic, Fully Automatic for cycled operation.

Precision honed cylinders. Adjustable tonnage pressure control. Adjustable limit switch for top return position of ram. Safety by-pass prevents overloading. Large self-contained oil reservoir. Direct connected motor drive to pumps through flexible couplings. Safety controls prevent accidents. Long bronze faced gibs adjustable for wear insure accurate travel of slide. Custom built.

Write or wire for full facts and prices.

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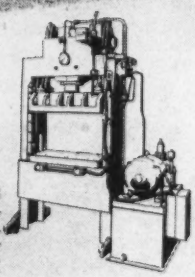
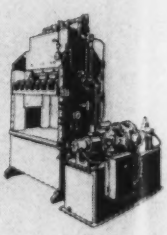
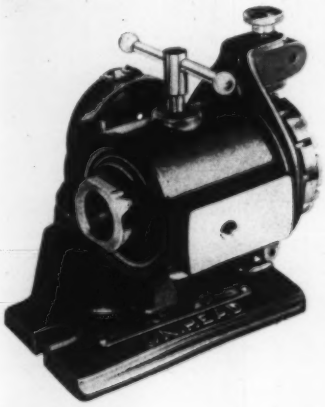


One Cylinder Type
Tons capacity 25 50 75 100 125 150. Platen and bolster, maximum usable size 24" F to B, 36" R to L. Stroke 6" 11" 18". Bed adjustment-increments of 6". Controls: Manual, Semi-Automatic, Fully Automatic for cycled operation.



Three Cylinder Type
Tons capacity 75 100 125 150. Platen and bolster maximum usable size, F to B, R to L, 45" x 72". Stroke 6" 11". Bed, fixed. Controls: Manual, Semi-Automatic, Fully Automatic for cycled operation.

veloped by Delta Power Tool Division, Rockwell Mfg. Co., Milwaukee 1, Wis. Although designed for use on a swivel table of a Delta toolmaker tool and cutter grinder, it may be used on other makes of machines when a stop-tooth unit is used. Head consists of a heat-treated sleeve with No.



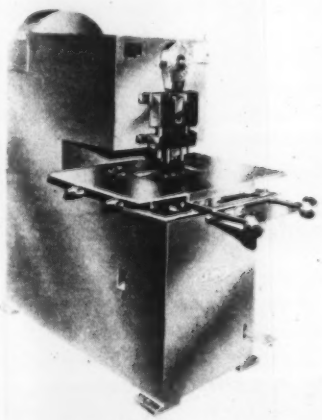
9 Brown & Sharpe taper, accurately mounted in preloaded, lubricated-for-life ball bearings.

Adjustable index stop collar and dog can be disengaged or set in any position. Twelve-tooth index collar with selector plate permits dog automatically to engage either 2, 3, 4, 6 or 12 selected equal spaces. Nut at back of sleeve pushes out tight-fitting adapters without damaging them. Swivel bracket has 360 graduations and makes possible many additional angles.

Check No. 9 on Reply Card for more Details

Nibbler Press Speeded Up

Sheets, strips or plates up to ⅛-inch thick can be punched with any shape of hole, slot or notch up to 4½ x 12 inches at a single setting by the Semco Nibbler press, made by Service Machine Co., 492 Miller St., Elizabeth



4, N. J. A 54 square inch area can be punched to a predetermined shape without special dies within 1½ min-

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⅜" to 4" O. D. 9 to 22 gauge

SQUARE-RECTANGULAR

½" to 3" 20 gauge

1" to 2½", 14, 16, 18 gauge

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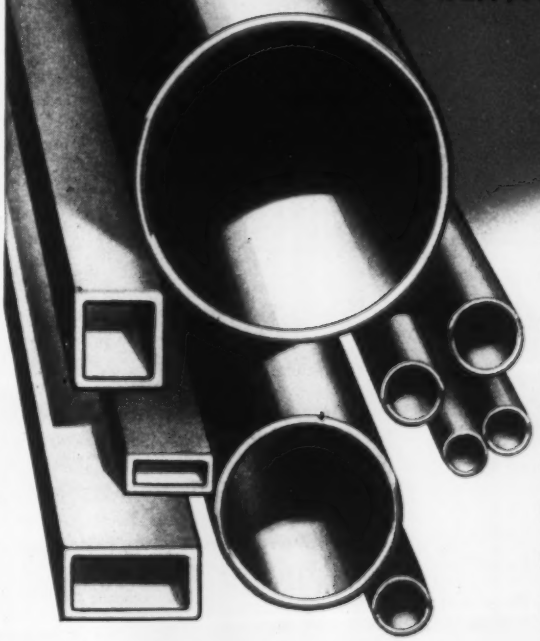
B ETTER PRODUCTS
C AT LOWER OST



Thousands of products, from intricate automobile and truck parts to furniture and vacuum cleaners, are made better and more economically with MICHIGAN TUBING. We invite you to consider the many advantages of using it in the fabrication of YOUR product.

A Quality Product, can be worked in your plant or prefabricated by MICHIGAN.

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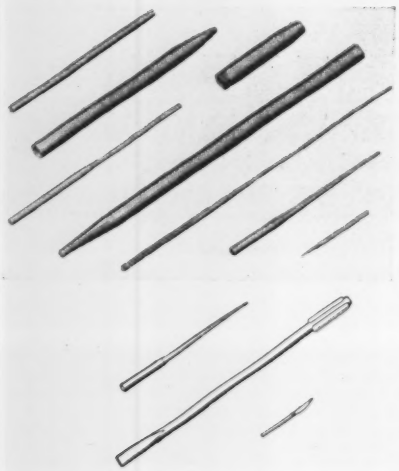


You save time and money when you rely on our high productive capacity and special equipment to turn out precision parts to your order.

Typical are surgical and dental instruments, pen and pencil barrels, soldering iron cases, etc. Medium wall tubing up to 2½" O.D. and solid steel .015" to ⅜" diameter handled.

We are also set up to make such parts as special rollers, shafts, studs, dowel pins, special needles, instrument shafts and pivots, screw driver and ice pick blades, knurled mandrels and spindles, etc.

Send your prints and specifications today for prompt quotation.

THE TORRINGTON COMPANY
Specialty Department
556 Field Street • Torrington, Conn.

Makers of
TORRINGTON NEEDLE BEARINGS

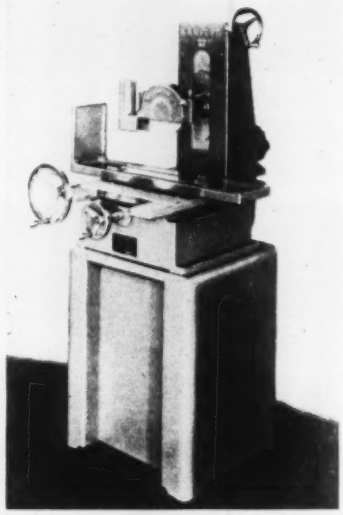
utes at the rate of 260 strokes per minute. Standard dies furnished with the machine are a ½-inch round and ½-inch square punch and die.

Duplications of punched holes, slots or notches are controlled by template and as many identical duplicates may be produced as desired. Templates are saved for future use. These may be of any sheet metal stiff enough to confine the follower pin. Ratio of template to actual work is 1 to 1 and the largest template blank of 6 x 17 inches is dropped over two studs. Power is provided by a 1 hp motor.

Check No. 10 on Reply Card for more Details

Rigid Surface Grinder

Blocks, dies or other parts up to 12 inches high may be finish ground with a 7-inch diameter wheel on the model MG surface made by Sanford Mfg. Co., 1020 Commerce Ave., Union, N. J. Meehanite castings give the machine extra strength and rigidity.



Grinding accuracy is checked up to 0.0002-inch at extreme positions.

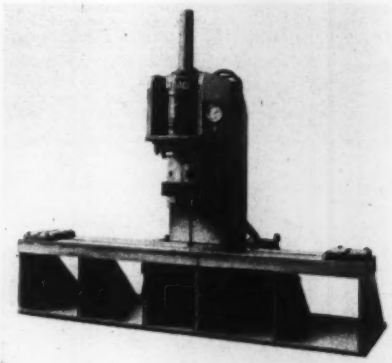
V-type ground and lapped slides are incorporated. Traverse movement is 8¾ inches, longitudinal 13 inches and vertical movement is 12 inches. Standard equipment includes a 110/220 v ac single phase motor, wheel adapter, dust guards, exhaust guard, grinding wheel and wrenches.

Check No. 11 on Reply Card for more Details

Press Straightens Tubing

The 12-inch stroke of a 100-ton hydraulic press, built by R. D. Wood Co., Philadelphia 5, Pa., may be used for straightening tubes, shafts, bars and similar pieces. Standing 10 feet high, the press has a working table measuring 22¼ inches x 12 feet 4 inches. Daylight between table and ram head face is 26½ inches. Table has two bases in machined grooves for assembly of disks or anvil blocks.

Bases are moved easily in increments of 6 inches any required distance either side of center. Ram head



is grooved for the attachment of dies. Hydraulic power is furnished by a two-pressure pumping unit and motor, mounted on a steel suction tank at the rear of the press.

Check No. 12 on Reply Card for more Details

Bends Irregular Shapes

Irregular shapes or true radii in tubing, bars, extrusions or roll-formed sections up to 8 inches wide may be bent with a rotary-fixture machine announced by Pines Engineering Co., 600 Walnut St., Aurora, Ill. Bender applies a horizontal stationary pressure pad of either steel or bronze construction which is air operated against a rotating-type die head. Head is mounted on a heavy vertical spindle driven by a 7½ hp variable speed motor. Limit switches and adjustable dogs control the degree of rotation of the die head.

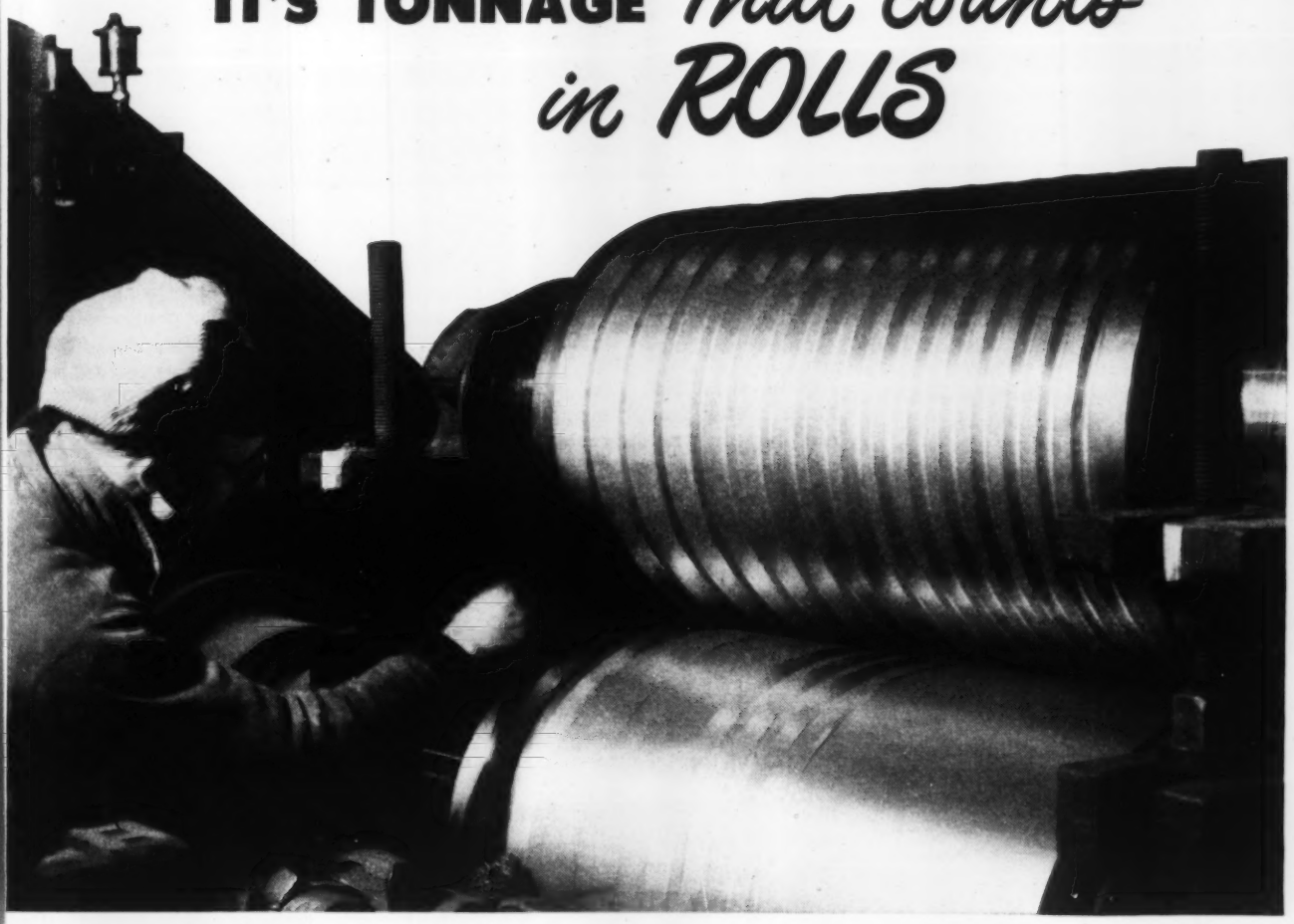
Lever-operated cam work clamp applies pressure for holding stock. Adjustable slide mounting of the air cylinder provides capacity for handling bends up to 7 feet in diameter. The stationary pressure pad assures smooth and wrinkle-free bends. To meet varied pressure requirements, the unit is designed to accommodate either a 6 or 8-inch air cylinder. A stroke of 12 inches is standard. Die head can be set to continue forward after a bend is made or reverse.

Check No. 13 on Reply Card for more Details

Chamfers, Burrs Rapidly

Motors from 1/3 to 1 hp and 600 to 3600 rpm can be used on a rapid countersinking, chamfering and burring machine, built by Black Drill Co., 1400 E. 222nd St., Cleveland 17, O. Machine consists of a cast iron base on which are mounted two traversing shaft motors with opposed cutting tools mounted in collets at the ends of the shafts, plus a tool post and

IT'S TONNAGE *that counts in* ROLLS



CUROLOY

BIRDSBORO ROLLS

BIRDSBORO ROLLS

BIRDSBORO ROLLS

Offices in:
Birdsboro, Pa. & Pittsburgh, Pa.

for Copper Bearing, Alloy Iron and Alloy Steel Rolls at their Best...it's BIRDSBORO

It's a name you can count on in rolls for maximum production and long roll life. Birdsboro Rolls are individually designed and engineered in accordance with the analyses and physical properties that will best accomplish *your specific* rolling requirements.

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R-3

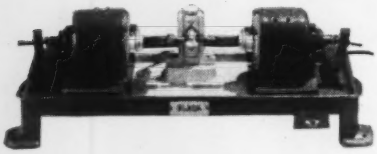
Birdsboro Steel Foundry & Machine Co. • Birdsboro, Pa.

BIRDSBORO ROLLS

DESIGNERS AND BUILDERS OF: Rolls • Crushing Machinery • Steel Mill Machinery • Hydraulic Presses • Steel Castings • Special Machinery

work holder. Tool post has micrometric adjustments and the work holder is made of tungsten steel to minimize wear.

Tools are brought to the work by depressing a foot pedal which ac-



tuates both shafts simultaneously. Each shaft has a micrometric adjustment for close control of cutting depth. Maximum stroke limited by motor shaft travel is 2 inches, permitting a wide variation in types and sizes of work which may be performed.

Check No. 14 on Reply Card for more Details

• • •

ELECTRONIC RECTIFIER UNITS: Floor or wall mounted electronic rectifier units to convert alternating current to direct current for general purpose industrial and commercial applications are available from Westinghouse Electric Corp., Pittsburgh 30, Pa. Standard units can be supplied with constant or adjustable direct current output voltages in ratings as high as 230 v, 87 amp.

Check No. 15 on Reply Card for more Details

BOX TRAILER: A new mobile corrugated shop box trailer is introduced by Palmer-Shile Co., Detroit 27, Mich. Boxes have trunnions with yoke for quick and convenient unloading, two stationary wheels and two swivel casters. Trailer hitch permits joining of several boxes in a train.

Check No. 16 on Reply Card for more Details

INDUSTRIAL HEATERS: Thermobloc Division, Prat-Daniel Corp., East Port Chester, Conn., announces the addition of two new, small capacity models to their line of self-contained, direct-fired industrial heaters. Called Thermopac type, they are made in 100,000 and 200,000 Btu per hour output for either gas or oil firing with thermostatic control.

Check No. 17 on Reply Card for more Details

MEASURES COLOR: Model 401 Lumetron Colorimeter, developed by Photovolt Corp., New York 16, N. Y., is intended mainly for the measurement of the transparent color of clear liquids and is furnished with six color filters to isolate the wavebands in which the liquids have maximum absorption. Instrument also serves for turbidity tests by measuring light-stopping effect of suspended particles.

Check No. 18 on Reply Card for more Details

BAR CUTTERS: Samson hand lever bar cutters, made by Julius Blum & Co. Inc., New York 11, N. Y., have an unbreakable steel plate frame. They will cut any size rod from 1/16-inch up to their rated capacity without changing knives. Knives are located at top of the machine. Units are available in two sizes.

Check No. 19 on Reply Card for more Details

FLOW CHECKS: To prevent hot boiler water from flowing to heating system when circulator is not running, Taco Heaters Inc., Providence 3, R. I., offers horizontal flow checks. They are available in 1, 1¼, 1½, 2, 2½ and 3-inch sizes.

Check No. 20 on Reply Card for more Details

REDUCTION CLUTCH: Model No. 5107 reduction clutch, made by Snow-Nebstedt Gear Corp., Hamden, Conn., eliminates the need for countershafts and accompanying requirements and contributes to a less expensive reversing arrangement. It has forward, reverse and neutral operating positions.

Check No. 21 on Reply Card for more Details

REDUCES MOTOR WEAR: Hydro-Throttle control, announced by Stratton Equipment Co., Cleveland 15, O., automatically controls speed of motor when operating truck equipment with power take off or equivalent. It reduces motor wear and improves operation of dump trucks, tail gate loaders, etc.

Check No. 22 on Reply Card for more Details

COMBUSTION TUBES: Mullite and zircon high temperature combustion tubes are offered by Burrell Corp., Pittsburgh, Pa. They are available in a variety of lengths and diameters and come with straight uniform diameters or tapered ends.

Check No. 23 on Reply Card for more Details

CUTOFF WHEELS: Bay State Abrasive Products Co., Westboro, Mass., announce Saf-T-Cut cutoff wheels that can be used wet or dry. They are resistant to rupture and are nylon reinforced for extra strength. The rough sides of the wheel give cool side cutting. Wheels can be used on cutoff machines and smaller diameter wheels may be used on portable grinders for slotting and notching.

Check No. 24 on Reply Card for more Details

SCROLL CHUCK—A new type universal scroll chuck with scroll bearing surface in the back portion of the chuck, is announced by Union Mfg. Co., New Britain, Conn. The new design provides interchangeability between spindles of the same type. Chucks are available in sizes 6, 8, 10 and 12 inches to fit various standard spindle noses.

Check No. 25 on Reply Card for more Details

VERTICAL TURBINE PUMPS: Ca-capacities from 50 to 15,000 gallons per minute are available in the new line of vertical turbine pumps developed by Worthington Pump & Machinery Corp., Harrison, N. J. Either oil or water lubricated pumps are available from various stock locations, arranged for motor drive, right angle gear drive or belt drive.

Check No. 26 on Reply Card for more Details

TEST INDICATOR: No. 711-E test indication with universal friction holder and shank, offered by L. S. Starrett Co., Athol, Mass., can be used for precise indicating on jobs in machining, layout, checking or inspection operations. By a ball swivel joint, unit is adjustable to sweep any hole or other surface within its range.

Check No. 27 on Reply Card for more Details

CONTROLS CYLINDER OPERATION: A new air valve for quick, positive control of small cylinder operation is announced by Ross Operating Valve Co., Detroit 3, Mich. Its chief feature is flexibility due to interchangeability of parts. Unit is available in three or four-way models with ¼ and ⅜-inch pipe sizes.

Check No. 28 on Reply Card for more Details

GIVE UNIFORM FLAME: A new series of line burners that are designed for use on applications employing natural, manufactured, propane or butane gases mixed with air by any conventional gas-air mixing equipment is introduced by Vapofier Corp., Chicago 43, Ill. Various shapes and length sections are available to provide any pattern of flame required by the user.

Check No. 29 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

INFLATIONARY pressures are beginning to force steel product prices upward. While the large producing interests are holding firmly to established quotations and indicate no early change is contemplated, some of the smaller steelmakers have taken the bull by the horns and are effecting increases. The undertone of the entire steel market is buoyant with scrap and other raw material prices rising and consuming demand pouring into the market in volume.

PRICES— Significance of price advances by a number of producers over the past week or so is not readily determined. Action by the smaller interests could forecast a general advance in the making. But in present circumstances, with government price control a definite threat, such an assumption would seem unjustified, especially since the larger producers are likely to move slowly in effecting upward revisions in published lists.

PREMIUMS— Consumers increasingly indicate willingness to pay premium prices for tonnage. Demand for high-priced conversion steel is insistent and offerings in the gray market are receiving more attention from buyers. Last week plate prices were raised by three eastern producers, Central Iron & Steel Co., Lukens Steel Co. and Worth Steel Co., increases ranging $6 to $8 per ton. Structural shape price was hiked $16 per ton by the Phoenix Iron & Steel Co., and two more producers of rail steel bars, Texas Steel Co. and Pollak Steel Co., raised prices. Steelworks scrap is up sharply, at least $5 per ton at Pittsburgh, tungsten ore advanced 50 cents to $1 per net ton unit, and in the nonferrous metals, lead went up 1 cent per lb and tin continued strong.

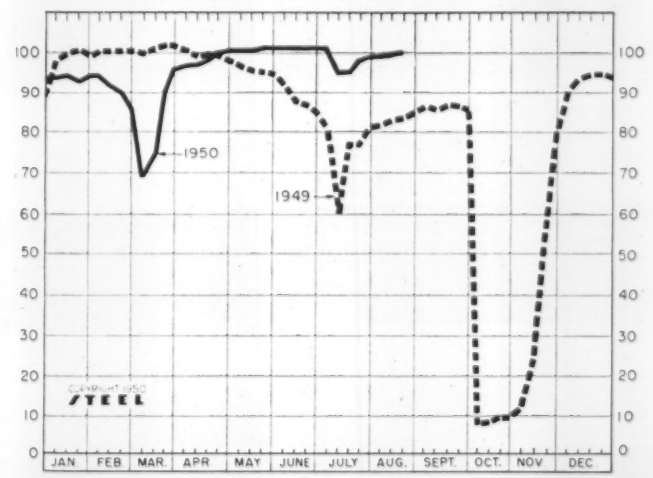
COMPOSITES— STEEL's arithmetical price composite on finished steel advanced to $94.50 last week from $94.36 the preceding week under the impact of scattered price increases. The weighted index on finished steel, however, held unchanged at 156.99, it being based at Pittsburgh where no new advances were posted. Strength in the scrap market is reflected in a rise in the composite on steelmaking grades to $40.67 from $38.58. Pig iron composites held steady with No. 2 foundry, $46.85, basic, $45.97 and malleable, $47.49.

DEMAND—Despite near record production pace, mill order backlogs continue to mount. Tonnage carryover into fourth quarter will be so large at least one month's output may be blanked out to care for the overflow. Meanwhile, the steelmakers are moving slowly in accepting new business pending clarification of government requirements over remainder of the year and development of definite policy as regards allocations. Consumer quotas for last quarter will be smaller, the mills warning customers further cuts in allotments may be necessary to care for military orders. So far emergency demands have been relatively small, but they are increasing steadily. General market opinion is that sufficient steel will be available for all normal civilian consumption into the foreseeable future. Temporary shortages are to be expected.

PRODUCTION— Steel is pouring from the furnaces in near-record tonnage. Last week the national ingot rate was stepped up ½ point to 100 per cent of capacity, equivalent to output of 1,926,803 tons. This was only slightly below the alltime weekly peak of 1,940,600 tons.

DISTRICT RATES— Operations rose 2 points to 91 per cent in St. Louis, 1 point to 99 in the Far West, ½ point to 98.5 in eastern Pennsylvania, and, from revised rates the preceding week, 2.5 points to 100 in Cleveland, and 1 point to 102.5 in Pittsburgh. Declines were reported of 13 points to 85 per cent in New England, 2 points to 102 in Detroit, and ½ point to 96.5 in Wheeling.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Aug. 19	Change	Same Week 1949	Same Week 1948
Pittsburgh	102.5	+ 1*	79	93
Chicago	102	0	90	94
Eastern Pa.	98.5	+ 0.5	75.5	91
Youngstown	106	0	88	103
Wheeling	96.5	— 0.5	91.5	93
Cleveland	100	+ 2.5*	99	97
Buffalo	104	0	101	101.5
Birmingham	100	0	100	100
New England	85	—13	62	83
Cincinnati	103	0	87	102
St. Louis	91	+ 2	87	80
Detroit	102	— 2	96	99
Western	99	+ 1	79	..
Estimated national rate	100	+ 0.5	83.5	95

Based on weekly steelmaking capacity of 1,906,267 net tons for first half and 1,926,803 second half, 1950; 1,843,516 tons, 1949; 1,802,476 tons, 1948. *Change from revised rate.

News Summary—p. 57 Production-Engineering News—p. 87

Composite Market Averages

	Aug. 17 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.99	156.99	156.69	152.52	101.85
Index in cents per lb. ..	4.253	4.253	4.245	4.132	2.759
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.50	$94.36	$94.36	$91.55	$58.27
No. 2 Fdry. Pig Iron, GT	46.85	46.85	46.47	46.10	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT..	47.49	47.49	47.27	47.27	25.29
Steelmaking Scrap, GT..	40.67	38.58	37.25	21.92	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Aug. 17 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	3.93	3.93	3.93	3.8164	2.57
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.75
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.46	3.42	3.42	3.4918	2.215
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ..	3.90	3.60	3.60	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.60	3.60	3.60	3.50	2.25
Plates, del. Philadelphia...	3.69	3.69	3.69	3.5848	2.30
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh...	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh...	3.50	3.50	3.25–50	3.25	2.10
Strip H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh ...	4.15–50	4.15–50	4.15–50	4.00–55	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	60.00	36.00
Wire rods, ⅜-⅝", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47-$50	$47-$50	$47.00	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	50.39	50.39	49.44	49.39	26.34
No. 2 Fdry, Pitts.	49.50	49.50	46.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	50.89	50.89	49.94	49.89	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.)del.Cin.	49.08	49.08	49.08	45.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

*Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts. ..	$46.00	$41.00	$41.00	$23.00	$20.00
No. 1 Heavy Melt. E. Pa. .	37.50	36.75	33.00	20.25	18.75
No. 1 Heavy Melt. Chicago	38.50	38.00	37.75	22.50	18.75
No. 1 Heavy Melt. Valley..	46.25	43.25	40.75	23.75	20.00
No. 1 Heavy Melt. Cleve..	43.25	40.75	38.50	20.00	19.50
No. 1 Heavy Melt. Buffalo.	39.75	36.75	36.75	24.25	19.25
Rails, Rerolling, Chicago..	56.50	55.125	48.50	34.50	22.25
No. 1 Cast, Chicago	49.00	49.00	44.50	39.00	20.00

Coke, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	15.50	15.50	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn.....	22.50	22.50	22.50	17.625	12.00
Zinc, E. St. Louis	15.00	15.00	15.00	10.00	8.25
Lead, St. Louis	12.80	11.80	11.80	14.80–.925	6.35
Tin, New York 101.00	103.50	91.00	103.00	52.00	
Aluminum, del.	17.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex. ..	24.50	24.50	24.50	38.50	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	48.00	$48.50	$49.00	$49.50
Brooklyn,N.Y.,del.	....	52.79	53.29	....
Newark,del	50.63	51.13	51.63	52.13
Philadelphia, del.	50.39	50.89	51.39	51.89
Birmingham District				
AlabamaCity,Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward,Ala. W15	41.88	42.38	....	....
Cincinnati,del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda,N.Y., W12	46.00	46.50	47.00	....
N.Tonawanda,N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester,N.Y., del.	48.63	49.13	49.63	....
Syracuse,N.Y.,del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary,Ind. C3	46.00	....	46.50	....
IndianaHarbor,Ind. I-2	46.00	....	46.50	....
So.Chicago,Ill. W-14, Y1	46.00	46.50	46.50	....
So.Chicago,Ill. C3	46.00	....	46.50	47.00
Milwaukee,del.	47.89	48.39	48.39	48.89
Muskegon,Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron,del. from Cleve.	48.39	48.89	48.89	49.39
Lorain,O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie,Pa. I-3	46.00	46.50	46.50	47.00
Everett,Mass. E1	....	50.50	51.00	....
Fontana,Calif. K1	52.00	52.50	....	....
Geneva,Utah G1	46.00	46.50	....	....
Seattle,Tacoma,Wash., del.	....	54.20	....	....
Portland,Oreg.,del.	....	54.20	....	....
LosAngeles,SanFrancisco,del. ...	53.70	54.20	....	....
GraniteCity,Ill. M10	47.90	48.40	48.90	....
St.Louis,del. (incl. tax)	48.65	49.15	49.65	....
Ironton,Utah C11	46.00	46.50	....	....
LoneStar,Tex. L6	41.50	*42.00	42.00	....
Minnequa,Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	49.50	49.50	50.00
Pitts,N.&S. sides, Ambridge, Aliquippa,del.	....	50.69	50.69	51.19
McKeesRocks,del.	....	50.45	50.45	50.95
Lawrenceville,Homestead, McKeesport, Monaca,del.	....	50.94	50.94	51.44
Verona,del.	....	51.40	51.40	51.90
Brackenridge,del.	....	51.63	51.63	52.13
Bessemer,Pa. C3	46.00	....	46.50	47.00
Clairton,Rankin,So.Duquesne,Pa. C3	46.00	....	....	....
McKeesport,Pa. N3	46.00	....	....	47.00
Sharpsville,Pa. S6	....	....	46.50	47.00
Steelton,Pa. B2	48.00	48.50	49.00	49.50
Steubenville,O. W10	46.00	....	....	....
Swedeland,Pa. A3	50.00	50.50	51.00	51.50
Toledo,O. I-3	46.00	46.50	46.50	47.00
Cincinnati,del.	51.01	51.51	....	....
Troy,N. Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard,O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield,O.,del.	50.26	50.76	50.76	51.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson,O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls,N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2	82.00
Wenatchee, Wash., OH & Fdry., frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos, semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton,Pa. B2	54.00
Philadelphia delivered	57.00
Troy,N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Aug. 17, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R7 ..... $50.00
Fontana,Calif. K1 ....76.00
Munhall,Pa. C3 ..... 50.00

INGOTS, Alloy (NT)
Detroit R7 ..... $51.00
Fontana,Calif K1 .....77.00
Houston,Tex. S5 ..... 59.00
Midland, Pa. C18 ....51.00
Munhall,Pa. C3 ..... 51.00
So.Duquesne,Pa. C3 ..51.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)
Bessemer,Pa. C3 ....$53.00
Clairton,Pa. C3 ..... 53.00
Conshohocken,Pa. A3..62.00
Ensley,Ala. T2 ..... 53.00
Fairfield,Ala. T2 ..... 53.00
Fontana,Cal. K1 ..... 72.00
Gary,Ind. C3 ..... 53.00
Johnstown,Pa. B2 .... 53.00
Lackawanna,N.Y. B2..53.00
Munhall,Pa. C3 ..... 53.00
So.Chicago,Ill. C3 .... 53.00
So.Duquesne,Pa. C3 ....53.00

Carbon, Forging (NT)
Bessemer,Pa. C3 ....$63.00
Buffalo R2 ..... 63.00
Canton,O. R2 ..... 63.00
Clairton,Pa. C3 ..... 63.00
Cleveland R2 ..... 63.00
Conshohocken,Pa. A3 ..68.00
Detroit R7 ..... 66.00
Ensley,Ala. T2 ..... 63.00
Fairfield,Ala. T2 ..... 63.00
Fontana,Calif. K1 ....82.00
Gary,Ind. C3 ..... 63.00
Geneva,Utah G1 ..... 63.00
Houston,Tex. S5 ..... 71.00
Ind.Harbor,Ind. I-2 ....63.00
Johnstown,Pa. B2 .... 63.00
Lackawanna,N.Y. B2...63.00
LosAngeles B3 ..... 82.00
Munhall,Pa. C3 ..... 63.00
Seattle B3 ..... 82.00
So.Chicago C3,R2,W14 .63.00
So.Duquesne,Pa. C3 ....63.00
So.SanFrancisco B3 ...82.00

Alloy (NT)
Bethlehem,Pa. B2 ....$66.00
Buffalo R2 ..... 66.00
Canton,O. R2, T7 ....66.00
Conshohocken,Pa. A3..70.00
Detroit R7 ..... 66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 ..... 66.00
Houston,Tex. S5 ..... 74.00
Ind.Harbor,Ind. Y1 ....66.00
Johnstown,Pa. B2 .... 66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 ..... 86.00
Massillon,O. R2 ..... 66.00
Midland,Pa. C18 ..... 66.00
Munhall,Pa. C3 ..... 66.00
Sharon,Pa. S3 ..... 66.00
So.Chicago C3,R2,W14.66.00
So.Duquesne,Pa. C3 ...66.00
Warren,O. C17 ..... 66.00
Youngstown Y1 ..... 66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ..... $76.00
Cleveland R2 ..... 76.00
Fontana,Calif. K1 ....100.00
Gary,Ind. C3 ..... 76.00
Ind.Harbor,Ind. I-2 ....76.00
Massillon,O. R2 ..... 76.00
So.Chicago,Ill. R2 ....76.00
So.Duquesne,Pa. C3 ...76.00

SHEETS BARS (NT)
Fontana,Calif. K1 ....$86.00

SKELP
Aliquippa,Pa. J5 ..... 3.25
Munhall,Pa. C3 ..... 3.15
Warren,O. R2 ..... 3.15
Youngstown C3, R2 .... 3.15

WIRE RODS
AlabamaCity,Ala. R2 ..3.85
Buffalo W12 ..... 3.85
Cleveland A7 ..... 3.85
Donora,Pa. A7 ..... 3.85
Fairfield,Ala T2 ..... 3.85
Fontana,Calif. K1 ....4.60
Houston,Tex. S5 ..... 4.25
Ind.Harbor,Ind. Y1 .... 3.85
Johnstown,Pa. B2 .... 3.85
Joliet,Ill. A7 ..... 3.85
LosAngeles B3 ..... 4.65
Minnequa,Colo. C10 .... 4.10
Monessen,Pa. P7 ..... 3.85
No.Tonawanda,N.Y. B11.3.85
Pittsburg,Calif. C11 ....4.50
Portsmouth,O. P12 .... 3.85
Roebling,N.J. R5 ..... 3.95
So.Chicago,Ill. R2 ..... 3.85
SparrowsPoint,Md. B2 .3.95
Sterling,Ill.(1) N15 .... 3.85
Struthers,O. Y1 ..... 3.85
Torrance,Calif. C11 ...4.65
Worcester A7 ..... 4.15

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.40
Aliquippa,Pa. J5 ..... 3.40
Bessemer,Ala. T2 ..... 3.40
Bethlehem,Pa. B2 ..... 3.45
Clairton,Pa. C3 ..... 3.40
Fairfield,Ala. T2 ..... 3.40
Fontana,Calif. K1 ..... 4.00
Gary,Ind. C3 ..... 3.40
Geneva,Utah G1 ..... 3.40
Houston,Tex. S5 ..... 3.80
Ind.Harbor,Ind. I-2 .... 3.40
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.00
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.00
Minnequa,Colo. C10 .... 3.75
Munhall,Pa. C3 ..... 3.40
Niles,Calif.(22) P1 .... 4.02
Phoenixville,Pa. P4 ..... 4.25
Portland,Oreg. O4 ..... 4.05
Seattle B3 ..... 4.05
So.Chicago,Ill. C3, W14.3.40
So.SanFrancisco B3 .... 3.95
Torrance,Calif. C11 .... 4.00
Weirton,W.Va. W6 ..... 3.40

Alloy Stand. Shapes
Clairton,Pa. C3 ..... 4.05
Fontana,Calif. K1 ..... 5.25
Munhall,Pa. C3 ..... 4.05
So.Chicago,Ill. C3 ..... 4.05

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ..... 5.15
Bessemer,Ala. T2 ..... 5.15
Bethlehem,Pa.(14) B2 ..5.20
Clairton,Pa. C3 ..... 5.15
Fairfield,Ala. T2 ..... 5.15
Fontana,Calif. K1 ..... 5.75
Gary,Ind. C3 ..... 5.15
Geneva,Utah G1 ..... 5.10
Ind.Harbor,Ind. I-2, Y1.5.15
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y.(14)B2 5.20
LosAngeles B3 ..... 5.75
Munhall,Pa. C3 ..... 5.15
So.Chicago,Ill. C3 ..... 5.15
So.SanFrancisco B3 .... 5.70
Struthers,O. Y1 ..... 5.15

Wide Flange
Bethlehem,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 ..3.45
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 ..5.20
Munhall,Pa. C3 ..... 5.10
So.Chicago,Ill. C3 ..... 5.10

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.20
Lackawanna,N.Y. B2 ..4.20
Munhall,Pa. C3 ..... 4.20
So.Chicago,Ill. C3 ..... 4.20
Weirton,W.Va. W6 .... 4.20

BEARING PILES
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.35
Bessemer,Ala. T2 ..... 5.35
Clairton,Pa. C3 ..... 5.35
Cleveland J5, R2 ..... 5.35
Conshohocken,Pa. A3 ..5.35
Ecorse,Mich. G5 ..... 5.60
Fairfield,Ala. T2 ..... 5.35
Fontana,Calif. K1 ..... 5.95
Gary,Ind. C3 ..... 5.35
Geneva,Utah G1 ..... 5.35
Ind.Harbor,Ind. I-2, Y1.5.35
Johnstown,Pa. B2 ..... 5.35
Munhall,Pa. C3 ..... 5.35
Pittsburgh J5 ..... 5.35
Sharon,Pa. S3 ..... 5.35
So.Chicago,Ill. C3 .... 5.35
SparrowsPoint,Md. B2..5.35
Warren,O. R2 ..... 5.35
Youngstown Y1 ..... 5.35

PLATES, Open-Hearth Alloy
Claymont,Del. W16 ....4.50
Coatesville,Pa. L7 ..... 4.80
Conshohocken,Pa. A3 ..4.40
Fontana,Calif. K1 ..... 5.40
Gary,Ind. C3 ..... 4.40
Johnstown,Pa. B2 ..... 4.40
Munhall,Pa. C3 ..... 4.40
Sharon,Pa. S3 ..... 4.40
So.Chicago,Ill. C3 ..... 4.40
SparrowsPoint,Md. B2 ..4.40

FLOOR PLATES
Cleveland J5 ..... 4.55
Conshohocken,Pa. A3 ...4.55
Harrisburg,Pa. C5 ..... 4.55
Ind.Harbor,Ind. I-2 .... 4.55
Munhall,Pa. C3 ..... 4.55
So.Chicago,Ill. C3 ..... 4.55

PLATES (Universal Mill)
Fontana,Calif. K1 ....4.40

PLATES, Carbon A.R.
Fontana,Calif. K1 ..... 5.25

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.50
Aliquippa,Pa. J5 ..... 3.50
Ashland,Ky.(15) A10 ..3.50
Bessemer,Ala. T2 ..... 3.50
Clairton,Pa. C3 ..... 3.50
Claymont,Del. W16 ..... 3.90
Cleveland J5 R2 ..... 3.50
Coatesville,Pa. L7 ..... 3.90
Conshohocken,Pa. A3 ..3.60
Ecorse,Mich. G5 ..... 3.75
Fairfield,Ala. T2 ..... 3.50
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.50
Geneva,Utah G1 ..... 3.50
Harrisburg,Pa. C5 ..... 4.25
Houston,Tex. S5 ..... 3.90
Ind.Harbor,Ind. I-2, Y1..3.50
Johnstown,Pa. B2 ..... 3.50
Lackawanna,N.Y. B2 ..3.50
Minnequa,Colo. C10 .... 4.30
Munhall,Pa. C3 ..... 3.50
Pittsburgh J5 ..... 3.50
Seattle B3 ..... 4.40
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. C3, W14.3.50
SparrowsPoint,Md. B2 ..3.50
Steubenville,O. W10 .... 3.50
Warren,O. R2 ..... 3.50
Weirton,W.Va. W6 .... 3.50
Youngstown C3, R2, Y1.3.50

PLATES, Wrought Iron
Economy,Pa. B14 .... 7.85

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ...3.75
Ashland,lcl(15) A10 ....4.25
Cleveland,cl R2 ..... 4.10
Warren,O.cl R2 ..... 4.10

BARS, Hot-Rolled Carbon
AlabamaCity, Ala. R2 ..3.45
Aliquippa,Pa. J5 ..... 3.45
Alton,Ill(1) L1 ..... 3.45
Atlanta,Ga. A11 ..... 3.60
Bessemer,Ala. T2 ..... 3.45
Buffalo R2 ..... 3.45
Canton,O. R2 ..... 3.45
Clairton,Pa. C3 ..... 3.45
Cleveland R2 ..... 3.45
Ecorse,Mich. G5 ..... 3.65
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 .... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 3.85
Niles,Calif. P1 ..... 4.17
N.Tonawanda,N.Y. B11.3.45
Pittsburg,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
Seattle B3, N14 ..... 4.20
So.Chicago C3, R2, W14.3.45
So.Duquesne,Pa. C3 .... 3.45
S.SanFran.,Cal. B3 .... 4.20
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Weirton,W.Va. W6 .... 3.45
Youngstown C3, R2 .... 3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 ..... 3.45
Atlanta A11 ..... 3.60
Johnstown,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 ..3.45
Niles,Calif. P1 ..... 4.17
Pittsburgh(23) J5 .... 3.45
Portland,Oreg. O4 ..... 4.20
SanFrancisco S7 ..... 4.00
Weirton,W.Va. W6 .... 3.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ..... 3.65

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ..... 3.95
Buffalo R2 ..... 3.95
Canton,O. R2, T7 ..... 3.95
Clairton,Pa. C3 ..... 3.95
Ecorse,Mich. G5 ..... 4.25
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 3.95
Houston,Tex. S5 ..... 4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 ..... 3.95
KansasCity, Mo. S5 .... 4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 ..... 5.00
Massillon,O. R2 ..... 3.95
Midland,Pa. C18 ..... 3.95
So.Chicago C3, R2, W14.3.95
So.Duquesne,Pa. C3 .... 3.95
Struthers,O. Y1 ..... 3.95
Warren,O. C17 ..... 3.95
Youngstown C3 ..... 3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 ..... 4.20
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 4.20
Youngstown C3 ..... 4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.20
Atlanta A11 ..... 5.35
Bessemer,Ala. T2 ..... 5.20
Bethlehem,Pa. B2 .... 5.20
Clairton,Pa. C3 ..... 5.20
Cleveland R2 ..... 5.20
Ecorse,Mich. G5 ..... 5.40
Fairfield,Ala. T2 ..... 5.20
Fontana,Calif. K1 ..... 6.25
Gary,Ind. C3 ..... 5.20
Ind.Harbor,Ind. I-2, Y1.5.20
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 ..5.20
LosAngeles B3 ..... 5.90
Pittsburgh J5 ..... 5.20
So.Duquesne,Pa. C3 .... 5.20
So.SanFrancisco B3 .... 5.95
Struthers,O. Y1 ..... 5.20
Youngstown C3 ..... 5.20

BARS, Cold-Finished Carbon
Aliquippa,Pa. K5 ..... 4.15
Ambridge,Pa. W18 ..... 4.15
BeaverFalls,Pa. M12,R2.4.15
Buffalo B5 ..... 4.15
Camden,N.J. P13 ..... 4.60
Carnegie,Pa. C12 ..... 4.15
Chicago W18 ..... 4.15
Cleveland A7, C20 .... 4.15
Detroit P17 ..... 4.30
Donora,Pa. A7 ..... 4.15
Ecorse,Mich. G5 ..... 4.35
Elyria,O. W8 ..... 4.15
FranklinPark,Ill. N5 .... 4.15
Gary,Ind. R2 ..... 4.15
Hammond,Ind. L2, M13.4.15
Hartford,Conn. R2 .... 4.55
Harvey,Ill. B5 ..... 4.15
LosAngeles R2 ..... 5.55
Mansfield,Mass. B5 .... 4.55
Massillon,O. R2, R8 .... 4.15
Midland,Pa. C18 ..... 4.15
Monaca,Pa. S17 ..... 4.15
Newark,N.J. W18 .... 4.55
Plymouth,Mich. P5 .... 4.40
Pittsburgh J5 ..... 4.10
Putnam,Conn. W18 .... 4.55
Readville,Mass. C14 .... 4.55
St.Louis,Mo. M5 ..... 4.55
So.Chicago,Ill. W14 .... 4.15
SpringCity,Pa.(5) K3 .. 4.55
Struthers,O. Y1 ..... 4.15
Waukegan,Ill. A7 ..... 4.15
Youngstown F3, Y1 .... 4.15

BARS, Cold-Finished Alloy
Aliquippa,Pa. K5 ..... 4.90
Ambridge,Pa. W18 .... 4.90
BeaverFalls,Pa. M12 .... 4.90
Bethlehem,Pa. B2 .... 4.90
Buffalo B5 ..... 4.90
Canton,O. R2, T7 .... 4.90
Carnegie,Pa. C12 ..... 4.90
Chicago W18 ..... 4.90
Cleveland A7, C20 .... 4.90
Detroit P17 ..... 5.05
Donora,Pa. A7 ..... 4.90
Elyria,O. W8 ..... 4.90
Gary,Ind. R2 ..... 4.90
Hammond,Ind. L2, M13.4.90
Hartford,Conn. R2 .... 5.20
Harvey,Ill. B5 ..... 4.90
Lackawanna,N.Y. B2 ..4.90
Mansfield,Mass. B5 .... 5.20
Massillon,O. R2, R8 .... 4.90
Midland,Pa. C18 ..... 4.90
Monaca,Pa. S17 ..... 4.90
Newark,N.J. W18 ..... 5.20
Plymouth,Mich. P5 .... 5.10
So.Chicago,Ill. R2, W14.4.90
Struthers,O. Y1 ..... 4.90
Warren,O. C17 ..... 4.90
Waukegan,Ill. A7 ..... 4.90
Worcester,Mass. A7 .... 5.20
Youngstown F3, Y1 .... 4.90

RAIL STEEL BARS
ChicagoHts.(3,4)C2,I-2 ..3.45
Dallas,Tex(4) S20 ..... 6.00
Franklin,Pa.(3, 4) F5..3.70
FortWorth,Tex.(26) T4 ..4.33
Huntngtn,W.Va.(3) W7.4.00
Marion,O.(3) P11 ..... 3.70
Moline,Ill.(3) R2 ..... 3.40
Williamsport(3) S19 .... 3.70

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.8.60
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 ..12.25
McK.Rks.(S.R.) L5 .... 8.60
McK.Rks.(D.R.) L5 ..11.25
McK.Rks.(Staybolt) L5.12.75

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.45
Alton,Ill.(6) L1 ..... 3.45
Atlanta A11 ..... 3.60
Buffalo R2 ..... 3.45
Cleveland R2 ..... 3.45
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 4.25
Niles,Calif. P1 ..... 4.17
Pittsburgh,Calif. C11 ....4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SandSprings,Okla. S5 ..4.35
Seattle B3, N14 ..... 4.20
So. Chicago,Ill. R2 .... 3.45
So.Duquesne,Pa. C3 .... 3.45
So.SanFrancisco B3 .... 4.20
SparrowsPoint,Md. B2 ..3.45
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Youngstown C3, R2 .... 3.45

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 .... 4.35
LosAngeles B3 ..... 5.00
Marion,O. P11 ..... 4.50
Seattle B3, N14 ..... 5.10
So.SanFrancisco B3 .... 5.00
SparrowsPt., ¼-1" B2 ..4.35
Williamsport,Pa. S19 ..4.35

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ..3.35
Ashland,Ky.(8) A10 ....3.35
Butler,Pa. A10 ..... 3.35
Cleveland J5, R2 ..... 3.35
Conshohocken,Pa. A3 ..3.45
Detroit M1 ..... 4.15
Ecorse,Mich.(8) G5 .... 3.55
Fairfield,Ala. T2 ..... 3.35
Fontana,Calif. K1 ..... 4.25
Gary,Ind. C3 ..... 3.35
Geneva,Utah G1 ..... 3.45
Ind.Harbor,Ind. I-2, Y1.3.35
Irvin,Pa. C3 ..... 3.35
Lackawanna,N.Y. B2 ..3.35
Munhall,Pa. C3 ..... 3.35
Pittsburg,Calif. C11 .... 4.05
Pittsburgh J5 ..... 3.35
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. W14 .... 3.35
SparrowsPoint,Md. B2 ..3.35
Steubenville,O. W10 .... 3.35
Torrance,Calif. C11 .... 4.05
Warren,O. R2 ..... 3.35
Weirton,W.Va. W6 .... 3.35
Youngstown C3, Y1 .... 3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 ..4.50
Dover,O. R1 ..... 4.65
Ind.Harbor,Ind. I-2 .... 4.40
Mansfield,O. E6 ..... 4.15
Niles,O. N12 ..... 4.10
Torrance,Calif. C11 .... 5.15

SHEETS, H-R (14 ga., heavier) High-strength Low-Alloy
Cleveland J5, R2 ..... 5.05
Conshohocken,Pa. A3 ..5.05
Ecorse,Mich. G5 ..... 5.25
Fairfield,Ala. T2 ..... 5.05
Fontana,Calif. K1 ..... 6.74
Gary,Ind. C3 ..... 5.05
Ind.Harbor,Ind. I-2, Y1.5.05
Irvin,Pa. C3 ..... 5.05
Lackawanna(35) B2 ... 5.05
Pittsburgh J5 ..... 5.05
Sharon,Pa. S3 ..... 5.05
So.Chicago,Ill. C3 .... 5.05
SparrowsPoint(36) B2 ..5.05
Warren,O. R2 ..... 5.05
Weirton,W.Va. W6 .... 5.05
Youngstown, C3, Y1 ...5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ..... 6.20
Ecorse,Mich. G5 ..... 6.40
Fontana,Calif. K1 ..... 7.05
Gary,Ind. C3 ..... 6.20
Ind.Harbor,Ind. I-2, Y1.6.20
Irvin,Pa. C3 ..... 6.20
Lackawanna(37) B2 .... 6.20
Pittsburgh J5 ..... 6.20
SparrowsPoint(38) B2...6.20
Warren,O. R2 ..... 6.20
Weirton,W.Va. W6 .... 6.20
Youngstown Y1 ..... 6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky. (8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo, Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, Hight-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles,O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (2S)	5.25
Niles,O. R2 (2S)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin, Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance, Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	**An'l**	**Galv.**
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

SHEETS, Well Casing

Fontana, Calif. K1	4.80

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Armature**	**Electric**	**Motor**	**Dynamo**
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor, Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Parkersburg F4 (cut lengths)	...	...	...	...	8.75
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	...
Parkersburg F4 (cut lengths)	9.30	...	...	...
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	...	...	...
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	...	...	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary, C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.60
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity, Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.35
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.50
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Fontana,Calif. K1	11.15
Harrison,N.J. C18	9.50
NewBritn.Conn.(10) S15	9.50
Pawtucket,R.I.(11) NS	9.50
Pawtucket,R.I.(12) NS	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.50
Berea,O. C7	4.60
Bridgeprt,Conn.(10) S15	4.50
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.75
Detroit M1	4.95
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	4.75
FranklinPark,Ill. T6	4.30
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.15
NewBritain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	5.00
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) NS	5.00
Riverdale,Ill. A1	4.30
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.50
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.00C**	**1.06-1.35C**
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	...
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.40	6.10	6.70	8.65	...
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	...
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. NS:					
Cleve.orPitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.80
Harrison,N.J. C18	...	...	9.30	11.25	13.80

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. MS	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) NS	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. MS	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. MS	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-8ga. I-1	5.15
No. Tonawanda B11	4.50
Palmer, Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester,Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. MS	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy,Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. MS	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint,Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	130

WOVEN FENCE, 9-15½ Ga.

	Col.
AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. MS	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity,Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill. N15	116

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville MS	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock To dealers & Mfrs. (7)

	Col.
AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. MS	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance,Calif. C11	126
Worcester,Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. MS	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	9.35

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	3.75

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	109.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ½" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (8" bar, elec. furn. billet, 5.65c); to consumers, 5.80c.
(27) Bar mill sizes.
(28) Rondorized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c. 0.035" and heavier.

STANDARD PIPE, T. & C.

BUTTWELD Size	List	Pounds	Carload Discounts from List, % —Black—			—Galvanized—		
Inches	Per Ft	Per Ft	A	B	C	D	E	F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.00	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	27.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ½" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ⅛", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜"; W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size	List	Pounds	Carload Discounts from List, % Seamless		Elec. Weld	
Inches	Per Ft	Per Ft	Black A	Galv. B	Black C	Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	—Seamless— H.R.	C.D.	Elec. Weld H.R.	C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding Stainless	—Plates— Carbon Base 10%	20%	—Strip— Cold-Rolled Carbon Base 10% Both Sides		—Sheets— Carbon Base 10%	20% Both Sides	Copper Base
302	....	....	....	....	19.75	21.50–24.00	75.00
304	22.50	26.50	....	....	20.75	22.50–25.5	77.00
305	....	....	....	....	....	....	79.00
309	28.00	32.00	....	....	....	....	....
310	34.00	38.00	....	....	....	....	105.00
316	27.00	31.00	....	....	26.00	28.00–33.5	....
317	32.00	36.00	....	....	....	....	....
318	31.00	35.00	....	....	....	....	....
321	24.00	28.00	....	....	23.00	25.00	90.00
347	25.00	29.00	....	....	24.00	26.00–31.5	94.00
405	18.75	24.75	....	....	....	....	....
410	18.25	24.25	....	....	....	....	....
430	18.25	24.25	....	....	....	....	....
Nickel	31.00	41.00	31.50	41.00	....	....	88.00
Inconel	39.00	51.00	....	....	....	....	140.00
Monel	32.00	42.00	26.50	33.50	....	....	83.00
Copper*	....	....	20.70†	25.65‡	....	....	....

* Deoxidized. † 17.20c for hot-rolled. ‡ 22.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville L7; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 27
- ⅝-in. & ⅝-in. 29
- ¾-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

H.P. & C.P. Reg. & Heavy Square:	Reg.	Heavy
½-in. and smaller	25	
⅝-in. & ⅝-in.	23	
¾-in.-1½-in.	23	
1⅝ in. and larger	16	
H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in..	28	25
¾-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16
C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅝-in..	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.	Lght.
½-in. and smaller	35	41	41
⅝-in. & ⅝-in.	30	36	36
¾-in.-1½ in..	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ¼-in. through ⅝-in. .. 50
- ¾-in. through 1 in. ... 43

Longer than 6 in.:
- ¼-in. through ⅝-in. .. 33
- ¾-in. through 1 in. .. 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 46
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger 24
N.F. thread, all diams. . 18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.25c
⅞-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE —Inches— Diam.	Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00
CARBON		
40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.50	30.00
303...	41.00	38.00	32.50
304...	41.00	36.50	31.50
309...	53.50	52.50	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.
Baltimore, bars wire and structurals A10.
Brackenridge, Pa., sheets A4.
Bridgeville, Pa., bars, wire, sheets & strip except Type 309 sheets 54.00c, 316 sheets 55.50c; 309 strip 53.00c, 316 strip 57.50c; 309 bars and wire 43.50c, 316 bars and wire 48.50c U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.
Carnegie, Pa., strip except Type 416, S18.
Cleveland, strip A7.
Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.
Dunkirk,N.Y., bars, wire A4.
Duquesne, Pa., bars C3.
Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.
Gary, Ind., sheets except Type 416 C3.
Harrison, N. J., strip C18.
Harrison, N. J., Types 302, 304, 316 wire and strip D6.
Massillon, all products R2.
McKeesport, Pa., bars; sheets except Type 416 C3.
McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.
Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & Strip C18.
Munhall, Pa., bars C3.
Pittsburgh, sheets C18.
Reading, Pa., bars & strip C4.
So. Chicago, Ill., bars & structurals C3.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars except Type 309 43.50c, type 316 48.50c U4.
Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.
Washington, Pa., bars, sheets & strip J3.
Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.
Watervliet, N. Y., structurals & bars A4.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4.
Youngstown, strip C8 .

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00
Tuluol, one deg...18.25-25.75
Industrial xylol ..19.75-27.50
Per ton bulk, ovens
Sulphate of ammonia.$32-45
Cents per pound, ovens
Phenol, 40 (carlots, returnable drums) 13.50
Do., less than carlots..14.25
Do., tank cars 12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $39; less than 60%, $36.
Imported, net ton, duty paid, metallurgical grade, $39-40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge Iron:	Cents
98+% Fe, carlots..	15.00
Swedish, c.i.f. New York, in bags ...	7.40-8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe (minus 325 mesh)	48.50
Powder Flakes	44.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns..70.00-	135.00
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots..28.50-	31.25
Copper:	
Electrolytic	31.75
Reduced	31.50
Lead	18.50
Manganese:	
Minus 100-mesh 52.00-	55.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel unannealed ...	75.50
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ..	75.00
Tin	91.12
Zinc, 10-ton lots..20.50-	28.00
Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed.	
over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb..	3.00
98.8%, minus 65 mesh, freight allowed,	
1000 lb and over..	2.90
less than 1000 lb ..	3.00
Molybdenum:	
99%, minus 80 to 200 mesh,	
over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb ..	2.75
82-88%, freight allowed,	
2000 lb and over..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvil,fur. .$14.00-14.50
Connellsvil,fdry. .15.00-16.00
New River, foundry...19.00
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens.$22.00
Everett, Mass., ovens
New England, del.‡ 23.40
Chicago, ovens 21.00
Chicago del. .....‡22.45
Detroit, del. 24.91
Terre Haute, ovens ...21.20
Milwaukee, ovens 21.75
Indianapolis, ovens 20.75
Chicago, del. 24.12
Cincinnati, del. 23.67
Detroit, del. 24.65
Ironton, O., ovens 20.40
Cincinnati, del. 22.71
Painesville, O., ovens .21.90
Buffalo, del. 24.02
Cleveland, del. 23.62
Erie, del. 22.04
Birmingham, ovens 19.15
Birmingham, del. 20.20
Philadelphia, ovens ...21.25
Neville Island,Pa.,ovens 21.00
Swedeland, Pa., ovens..21.20
St. Louis, ovens.....22.99
St. Louis, del. 24.12
Portsmouth, O., ovens..20.15
Cincinnati, del. 22.71
Detroit, ovens 21.65
Detroit, del. 22.65
Buffalo, del. 24.69
Flint, del. 24.09
Pontiac, del. 23.04
Saginaw, del. 24.40

Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

UNIVERSITY OF MICHIGAN LIBRARIES DIGITIZED BY HATHITRUST

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York(city)	5.82	6.84	7.73	6.14	...	5.97	6.64	8.60	5.95	6.18	7.64
New York(c'try)	5.52	6.64	7.53	5.84	...	5.67	6.44	8.40	5.65	5.88	7.34
Boston (city) ..	5.95	6.75	7.37	5.90	...	5.80	6.39	8.70	5.95	6.28	7.48
Boston (c'try) .	5.75	6.55	7.17	5.70	...	5.60	6.19	8.50	5.75	6.08	7.28
Phila. (city) ..	6.60-6.70	6.75	7.10	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try)..	6.35-6.45	6.50	6.85	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.66	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.46	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.39	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.35	...	6.90	5.63	...	5.53	6.30	...	5.63	5.45	7.13
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[3]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[3]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.60-6.70	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[3]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.30	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.10	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city)..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.05	5.30	...	5.30	5.85	9.75††[3]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.85	5.10	...	5.10	5.65	9.55††[3]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	6.94	5.44	...	5.44	6.09	9.89††[3]	5.59	5.74	6.94
Milwau. (c'try)	5.29	6.09	7.14	5.24	...	5.24	5.89	9.69††[3]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[3]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[3]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	8.20	6.15	8.90	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	8.00	5.95	8.70	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[3]	7.45[9]	8.25[3]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [3]—500 to 1499 lb; [5]—450 to 1499 lb; [6]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅝" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Bonne Terre, Mo., Blue Bell, Williams, Millvale, W. Va., Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Mo., $12.45; Martin, Millersville, Narlo, Clay Center, and Bellsville, O., Billmeyer, Plymouth Meeting, Pa., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Wolframite	$25.00-$25.50
Scheelite	$28.50

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr. c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 148)

Tin and Lead Set Fast Price Pace

Straits spot sells at $1.075, only 2½ cents below the all-time high, before easing to $1.01. Lead may move higher since supplies at 12.80c; St. Louis, remain scarce

New York—Lead and tin paced metals to higher price levels last week. While other major nonferrous metal prices are unchanged, undertone of the markets is strong.

Runaway prices in the London tin market to an all-time high followed the Ministry of Supply's withdrawal as an active seller.

Volume is restricted here to small lots. Straits spot advanced sharply here to around $1.075 before easing to $1.01 on Aug. 17. The market was close to the all-time high of $1.10 which was established in May, 1918.

Under a new law signed by the President last Tuesday, the government is authorized to continue operation of the Texas City, Tex., tin smelter until June 30, 1956.

Lead prices advanced 1-cent a pound Aug. 15 to the basis of 12.80c. St. Louis. This was a direct result of the extreme shortage of metal for nearby delivery and followed a revival of activity of the gray market. Sales in the regular market more than doubled last week, both September and October metal being sold on an average price basis. Under normal conditions, another advance in lead would be logical, considering the supply-demand situation; some traders think a further rise is possible.

Export Price Rises—Consumers of zinc are unable to increase inventories against the possibility of government control over distribution. Some galvanizers have uncomfortably low stocks. The domestic price is firm and unchanged, but in the export market prime western zinc sold at 16.50c and 17.00c a pound, f.a.s. Gulf ports.

Copper Offerings Meager—Demand for copper continues heavy and far in excess of available supplies. Fabricators in some cases are temporarily out of the market on brass mill products, or are reducing allocations to regular customers.

Copper fabricators plan to increase prices for copper products to cover the two-cent tariff which went into effect July 1. Action is delayed pending final disposition of the proposal in Congress to suspend the tariff.

Stocks of refined copper declined to only 48,266 tons in July from 50,327 tons at the end of June. Production of refined metal dropped to 96,734 tons from 113,961 tons while shipments slumped to only 95,983 tons from 126,047 tons in June. Production of crude copper amounted to 76,640 tons of primary and 8675 tons of secondary compared with 78,962 tons and 17,792 tons, respectively, in June.

Aluminum Foil Division Expands

Oakland, Calif.—Kaiser Aluminum & Chemical Sales Inc., this city, is expanding operations of its foil division with the introduction of aluminum household wrap for retail sales. First distribution of the packaged foil will be through retail grocery stores in Pacific Coast area. The foil is being produced and packaged at the firm's Permanente, Calif., plant.

Commercial demand for aluminum is increasing and its field expanding rapidly. Even before the outbreak of war in Korea and the stepped-up national defense program, Kaiser Aluminum & Chemical Corp. had operated its aluminum pig and sheet facilities at practically full capacity to meet peace-time demands.

Builders Head List—Biggest single user of aluminum today is the building products industry, using 30 per cent of aluminum sheet production. Applications of all forms of aluminum to building materials have jumped 20 times the 1939 volume. Registering an eight-fold rise during the same period, the automotive industry used 86.4 million pounds of aluminum sheet, not including aluminum castings, forgings and special shapes made by extrusion.

About 60 per cent of aluminum is rolled into sheet, and sheet products last year ran nearly seven times the volume of 10 years ago. Appliance manufacturers used 10 per cent of aluminum sheet products last year; utensil manufacturers, 10 per cent; aircraft industry, 14 per cent.

Wrought Products Up Five Fold—American industries required about 1.2 billion pounds of aluminum wrought products last year, about five times the 1939 prewar peak.

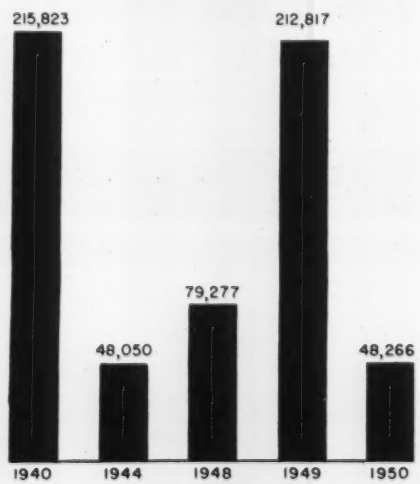
Aluminum foil shipments were five times larger than in 1939 and represented 97 per cent of all foil used. Foil is used in countless ways: For packaging, labeling, radio and television sets, insulation, and for wrapping food for freezing and cooking.

Aluminum extrusions expanded more than eight times in 10 years; electrical conductor shipments doubled; wire, rod and bar products increased nearly four-fold.

Developments are constantly taking place in manufacturing, construction and transportation that are opening up much greater uses for aluminum. The transportation industry, for example, is profiting notably from the increased pay loads obtained by trucks, buses and railroads, using equipment manufactured from the lightweight metal. More than 30 per cent of all truck trailers manufactured last year featured aluminum.

Copper Supply Tightens

. . . stocks drop to 6-year low
(Net tons held at end of July)



Slag Metal Recovery Rises

New York—While demand for nonferrous metals far exceeds the country's supply and the present military situation highlights the need to conserve all available material, significant beginnings have been made toward the recovery of vast quantities of zinc, lead and other critical metals through a process known in the smelting industry as "slag fuming."

Slag fuming is an efficient process for recovering metals from slag dump residue which had been discarded after ordinary smelting operations as being economically useless. During and since the last war, three installations of slag fuming equipment have been made in North America, says D. V. Sherban, engineer, Babcock & Wilcox Co., which has worked closely with the smelting industry in developing and manufacturing the equipment for this process.

The first installation of B&W designed fuming equipment was made in the Kellogg, Idaho, plant of Bunker Hill & Sullivan Mining Co. in 1943. This operation recovers 40 to 45 tons of zinc, in addition to a smaller amount of lead from approximately 400 tons of slag daily. The second installation of this equipment was made at the El Paso, Tex., plant of American Smelting & Refining Co. which went into service two years ago.

An installation now being erected was made at Flin Flon, Manitoba, for Hudson Bay Mining & Smelting Co. At this smelter there is an 800,000-ton accumulation of residue containing about 26 per cent zinc alone, it is estimated.

The fuming operation is a process in which zinc or lead, in the form of vapor is "fumed" up from the surface of a furnace-load of molten slag. The vapor is converted into a metallic oxide which is cooled and collected as a solid mass, or as a powder, for further processing into finished metal.

Dow Chemical Buys Plant

Midland, Mich.—Dow Chemical Co., this city, purchased for $1.5 million a plant at Madison, Ill., for use as a magnesium rolling and fabricating mill. The plant, built by the government at a cost of $29 million for production of axles for military trucks, was closed down in the summer of 1945. It had been operated during the war by Standard Steel Springs Co. and George A. Fuller Co. The sale, handled through General Services Administration, does not include machinery and equipment in the plant.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50c, Conn. Valley; Lake 22.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 23.00c; 88-10-2 (No. 215) 32.50c; 80-10-10 (No. 305) 27.00c; No. 1 yellow (No. 405) 19.75c.

Zinc: Prime western 15.00c; brass special 15.25c; intermediate 15.50c, East St. Louis; high grade 16.10c, delivered.

Lead: Common 12.80c; chemical 12.90c; corroding 12.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50c, pigs 16.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.75-21.25c; No. 12 foundry alloy (No. 2 grade) 20.25-20.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 21.00c; grade 2 20.50c; grade 3, 20.00c; grade 4, 19.50c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 22.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt $1.01.

Antimony: American 99-99.8% and over but not meeting specifications below 24.50c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 25.00c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 22.00c; English, 23.00c; Belgian, 23.00c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $77-$80 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.15 del.; special or patented shapes, $2.30.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $74-$77 per ounce.

Palladium: $24 per troy ounce.

Iridium: $160 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 22.50-cent copper.)

Sheet: Copper 37.43; yellow brass 34.19; commercial bronze, 95%, 37.38; 90%, 36.93; red brass, 85% 35.96; 80%, 35.52; best quality, 35.04; nickel silver, 18%, 48.39; phosphor-bronze, grade A, 5% 55.11.

Rods: Copper, hot-rolled 33.28; cold-drawn 34.53; yellow brass free cutting, 28.54; commercial bronze, 95% 37.07; 90% 36.62; red brass 85% 35.65; 80% 35.21.

Seamless Tubing: Copper 37.47; yellow brass 37.20; commercial bronze 90% 39.59; red brass 85% 38.87; 80% 38.43.

Wire: Yellow brass 34.48; commercial bronze, 95% 37.67; 90% 37.22; red brass, 85% 36.25; 80% 35.81; best quality brass 35.33.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67, l.c.l. 27.17, 100,000 lb lots 26.545; weatherproof, f.o.b. eastern mills, c.l. 28.10, l.c.l. 28.60, 100,000 lb lots 27.85; magnet, del., 15,000 lb or more 32.50, l.c.l. 33.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0.060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $18.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $18.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets, 20.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 20.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 19.00c; over 12-in., 20.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 75.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip, cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-59.00c; 25 to 99 lb. 45.00-49.00c; 100 lb to 5000 lb, 38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 51.40c, under 1000 lb 49.40c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 28.00c; over 200 lb, 27.00c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c; 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl, 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 44.6c, 10 or more drums 42.6c, f.o.b. Niagara Falls, N. Y.; 45.85c and 43.85c, respectively, del. Cleveland or Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Heavy Clean	Ends Rod	Turnings Clean
Copper	19.50	19.50	18.75
Yellow Brass	16.75	16.50	15.50
Commercial Bronze			
95%	18.50	18.25	17.75
90%	18.375	18.125	17.625
Red brass			
85%	18.125	17.875	17.375
80%	17.875	17.625	17.125
Best Quality (71-80%)	17.50	17.25	....
Muntz metal	15.75	15.50	15.00
Nickel, silver, 10%	19.12½	18.87½	9.56¼
Phos. bronze, A	19.75	19.50	18.50
Naval brass	16.12½	15.87½	15.37½
Manganese bronze	16.12½	15.87½	15.25

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 19.75; No. 2 copper 18.75; light copper 17.75; composition red brass 17.25; radiators 14.00; heavy yellow brass 13.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 19.75; No. 2 copper 18.75; light copper 17.75; refinery brass (60% copper) per dry copper content 18.25.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 18.00-18.25; No. 2 16.75-17.00; light copper 15.75-16.00; No. 1 composition red brass 15.00-15.25; No. 1 composition turnings 14.50-14.75; mixed brass turnings 9.50-9.75; new brass clippings 15.75-16.00; No. 1 brass rod turnings 14.00-14.25; light brass 9.50-9.75; heavy yellow brass 10.75-11.00; new brass rod ends 14.25-14.50; auto radiators, unsweated 11.75-12.00; cocks and faucets, 13.50-13.75; brass pipe 14.50-14.75.

Lead: Heavy 10.50-10.75; battery plates 5.75-6.00; linotype and stereotype 12.00-12.25; electrotype 10.25-10.50; mixed babbitt 9.75-10.00.

Zinc: Old zinc 8.50-8.75; new die cast scrap 8.25-8.50; old die cast scrap 5.50-5.75.

Tin: No. 1 pewter 55.00-57.00; block tin pipe 75.00-77.00; No. 1 babbitt 50.00-52.00.

Aluminum: Clippings 28 13.00; old sheets 10.00; crankcase 10.00; borings and turnings 6.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Aug. 17	22.50	12.80	15.00	101.00	17.50	24.50	48.00	72.75
Aug. 16	22.50	12.80	15.00	105.00	17.50	24.50	48.00	72.75
Aug. 15	22.50	12.80	15.00	107.50	17.50	24.50	48.00	72.75
Aug. 14	22.50	11.80	15.00	106.00	17.50	24.50	48.00	72.75
Aug. 11-12	22.50	11.80	15.00	105.00	17.50	24.50	48.00	72.75
Aug. 10	22.50	11.80	15.00	103.00	17.50	24.50	48.00	72.75
Aug. 9	22.50	11.80	15.00	101.50	17.50	24.50	48.00	72.75
Aug. 8	22.50	11.80	15.00	99.25	17.50	24.50	48.00	72.75
Aug. 4-7	22.50	11.80	15.00	98.50	17.50	24.50	48.00	72.75
Aug. 3	22.50	11.80	15.00	97.75	17.50	24.50	48.00	72.75
Aug. 2	22.50	11.80	15.00	98.00	17.50	24.50	48.00	72.75
Aug. 1	22.50	11.80	15.00	97.50	17.50	24.50	48.00	72.75
July Avg.	22.50	11.46	15.00	89.68	17.50	24.50	48.00	72.75
July 31	22.50	11.80	15.00	95.50	17.50	24.50	48.00	72.75
July 28-29	22.50	11.80	15.00	94.75	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Aug. 17, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 17	$40.67
Aug. 10	38.58
July 1950	37.04
Aug. 1949	20.86
Aug. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	*$46.00‡*
No. 2 Heavy Melt.	*38.00*
No. 1 Busheling	*46.00‡*
No. 1 Bundles	*46.00‡*
No. 2 Bundles	*37.00-38.00‡*
Heavy Turnings	*41.00-42.00*
Machine Shop Turnings	31.00-31.50†
Mixed Borings, Turnings	31.00-31.50†
Short Shovel Turnings	35.50
Cast Iron Borings	*34.00-35.00*
Low Phos. Steel	*50.00-51.00*

Cast Iron Grades

No. 1 Cupola Cast	*44.00-45.00*
No. 1 Machinery Cast	*48.00-49.00*
Charging Box Cast	*43.00-44.00*
Heavy Breakable Cast	*41.00-42.00*

Railroad Scrap*

No. 1 R.R. Heavy Melt.	47.00-47.50
Rails, Random Lengths	46.00-46.50
Rails, 2 ft. and under	51.00-51.50
Rails, 18 in. and under	52.00-52.50
Railroad Specialties	49.50-50.00
Axles	45.00-46.00
Angles, Splice Bars	46.00-47.00

† Crushers' buying prices.
‡ Brokers paying $46-$47 for open-hearth grades.
* Nominal.

CLEVELAND

No. 1 Heavy Melt. Steel	*$43.00-43.50*
No. 2 Heavy Melt. Steel	*38.50-39.00*
No. 1 Busheling	*43.00-43.50*
No. 1 Bundles	*43.00-43.50*
No. 2 Bundles	*31.00-32.00*
Machine Shop Turnings	*29.50-30.00*
Mixed Borings, Turnings	*33.00-33.50*
Short Shovel Turnings	*33.00-33.50*
Cast Iron Borings	*33.00-33.50*
Low Phos.	*44.00-44.50*

Cast Iron Grades

No. 1 Cupola	*49.00-50.00*
Charging Box Cast	44.00-45.00
Stove Plate	43.00-44.00
Heavy Breakable Cast	41.00-42.00
Unstripped Motor Blocks	*35.00-36.00*
Brake Shoes	*39.00-40.00*
Clean Auto Cast	*49.00-50.00*
No. 1 Wheels	44.00-45.00
Burnt Cast	*39.00-40.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50
R.R. Malleable	49.00-50.00
Rails, 3 ft and under	*53.00-54.00*
Rails, 18 in. and under	*54.00-55.00*
Rails, Random Lengths	*49.00-50.00*
Cast Steel	*47.00-47.50*
Railroad Specialties	*48.00-48.50*
Uncut Tires	49.00-50.00
Angles, Splice Bars	50.00-50.50

VALLEY

No. 1 Heavy Melt. Steel	*$46.00-46.50*
No. 2 Heavy Melt. Steel	*39.50-40.00*
No. 1 Bundles	*46.00-46.50*
No. 2 Bundles	*34.00-34.50*
Machine Shop Turnings	*34.00-34.50*
Short Shovel Turnings	*36.00-36.50*
Cast Iron Borings	*36.00-36.50*
Low Phos.	*46.50-47.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*47.00-47.50*

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$37.00-38.00*
No. 2 Heavy Melt. Steel	*35.00-35.50*
No. 1 Busheling	*36.00-37.00*
No. 1 Bundles	*37.00-38.00*
No. 2 Bundles	*30.50-31.00*
Machine Shop Turnings	*29.00-30.00*
Short Shovel Turnings	*32.00*
Mixed Borings, Turnings	*28.00-28.50*
Low Phos. Punchings and Plate, elec. fur. grade	*44.00*
Low Phos. Plate, 5 ft & Under	*43.00*
Elec. Furnace Bundles	39.00-40.00
Heavy Turnings	37.00-38.00
No. 1 Chemical Borings	34.00
Knuckles and couplers	*43.00-44.00*
Steel car wheels	*43.00-44.00*

Cast Iron Grades

No. 1 Cupola Cast	*38.50-39.00*
No. 1 Machinery Cast	*42.00*
No. 1 Yard Cast	*37.00-37.50*
Charging Box Cast	37.00
Heavy Breakable Cast	37.00
Clean Auto Cast	*42.00*
No. 1 Wheels	*45.00-46.00*
Malleable	*50.00*

CINCINNATI

No. 1 Heavy Melt. Steel	*$40.00*
No. 2 Heavy Melt. Steel	*34.00*
No. 1 Busheling	*40.00*
No. 1 Bundles	*40.00*
No. 2 Black Bundles	*34.00*
No. 3 Bundles	*27.00*
Machine Shop Turnings	23.00
Short Shovel Turnings	26.00
Mixed Borings, Turnings	25.00
Cast Iron Borings	26.00

Cast Iron Grades

No. 1 Cupola Cast	49.00
Charging Box Cast	*40.00*
Stove Plate	*34.00*
Heavy Breakable Cast	40.00
Unstripped Motor Blocks	29.00
Brake Shoes	*30.00*
Clean Auto Cast	49.00
Drop Broken Cast	51.00
Low Phos., 18 in. and under	50.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.00*
R.R. Malleable	*45.00*
Rails, Rerolling	47.00
Rails, Random Lengths	*45.00*
Rails, 18 in. and under	52.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$28.50-29.50
No. 1 Bundles	37.50-38.50
No. 2 Bundles	26.00-27.00
No. 1 Busheling	35.50-36.50
Machine Shop Turnings	23.00-24.00
Forge Flashings	36.00-37.00
Short Shovel Turnings	25.00-26.00
Cast Iron Borings	25.00-26.00
Punchings & Plate Scrap	38.50-39.50

Cast Iron Grades

No. 1 Cupola Cast	40.00-41.00
Heavy Breakable Cast	33.00-34.00
Clean Auto Cast	44.00-45.00

BUFFALO

No. 1 Heavy Melt. Steel	*$39.50-40.00*
No. 2 Heavy Melt. Steel	*36.00-36.50*
No. 1 Busheling	*36.00-36.50*
No. 1 Bundles	*37.00-37.50*
No. 2 Bundles	*34.00-34.50*
Machine Shop Turnings	*30.00-30.50*
Mixed Borings, Turnings	*30.00-30.50*
Cast Iron Borings	*30.00-30.50*
Short Shovelings	*32.00-32.50*
Low Phos.	*41.50-42.00*

Cast Iron Grades

No. 1 Cupola	36.50-37.50
No. 1 Machinery	*41.00-42.00*
Malleable	*36.00-37.00*

Railroad Scrap

Rails, 2 ft. and under	*49.00-50.00*
Rails, random size	*44.00-45.00*
Railroad Specialties	*42.00-43.00*

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$34.00-35.00*
No. 2 Heavy Melt. Steel	26.00-27.00
No. 1 Busheling	28.00-29.00
No. 1 Bundles	*34.00-35.00*
No. 2 Bundles	*25.50-26.00*
Machine Shop Turnings	*22.00-23.00*
Mixed Borings, Turnings	*22.00-23.00*
Short Shovel Turnings	*24.00-25.00*
Punchings & Plate Scrap	*35.00-36.00*
Low Phos. Plate, 5 ft & under	*35.00-36.00*
Elec. Furnace Bundles	*35.00-36.00*

Cast Iron Grades

No. 1 Cupola Cast	29.00-30.00
No. 1 Machinery	30.00-31.00
Charging Box Cast	29.00-30.00
Heavy Breakable	29.00-30.00
Unstripped Motor Blocks	21.00-22.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$33.00-34.00*
No. 2 Heavy Melt. Steel	*25.50-26.50*
No. 1 Bundles	*33.00-34.00*
Machine Shop Turnings	*22.50-23.00*
Short Shovel Turnings	*24.50-25.00*
Mixed Borings, Turnings	*24.00-24.50*
No. 1 Busheling	*33.00-34.00*
Bar Crops and Plate	*36.00-37.00*
Punchings & Plate Scrap	*36.00-37.00*
Chemical Borings	*22.50-23.50*

Cast Iron Grades

No. 1 Cupola Cast	*33.00-34.00*
Mixed Cast	29.00-29.50
Heavy Breakable Cast	*28.50-29.00*
Stove Plate	*29.00-30.00*

CHICAGO

No. 1 Heavy Melt. Steel	*$38.00-39.00†*
No. 2 Heavy Melt. Steel	*36.00-37.00†*
No. 1 Bundles	*38.00-39.00†*
No. 2 Bundles	*31.00-32.00†*
Machine Shop Turnings	*27.00-28.00*
Mixed Borings, Turnings	*27.00-28.00*
Short Shovel Turnings	29.00-30.00
Cast Iron Borings	29.00-30.00
Low Phos.	*46.00-47.00*
Elec. Furnace Bundles	*39.00-40.00*
Heavy Turnings	*32.00-33.00*
Cut Structurals	44.00-45.00

Cast Iron Grades

No. 1 Cupola Cast	48.00-50.00
Clean Auto Cast	49.50-50.50
No. 1 Wheels	39.00-40.00
Stove Plate	38.00-39.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*44.00-45.00*
Malleable	*53.00-54.00*
Rails, Rerolling	*56.00-57.00*
Rails, Random Lengths	*48.00-49.00*
Rails, 2 ft and under	*54.00-55.00*
Rails, 18 in. and under	*55.00-56.00*
Railroad Specialties	*47.00-48.00*
Angles, Splice Bars	*51.00-52.00*

† Brokers' buying prices.

BIRMINGHAM

No. 1 Heavy Melt. Steel	$32.00-33.00
No. 2 Heavy Melt. Steel	27.00-28.00
No. 1 Busheling	29.00-30.00
No. 2 Bundles	26.00-28.00
Machine Shop Turnings	25.00-26.00
Mixed Borings, Turnings	23.00-24.00
Short Shovel Turnings	27.00-28.00
Cast Iron Borings	27.00-28.00
Bar Crops and Plate	37.00-38.00
Cut Structurals	37.00-38.00

Cast Iron Grades

No. 1 Cupola Cast	40.00-41.00
Stove Plate	35.00-36.00
No. 1 Wheels	33.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	35.00-36.00
R.R. Malleable	nominal
Rails, Rerolling	39.00-40.00
Rails, 3 ft and under	44.00-45.00
Angles and Splice Bars	40.00-41.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$38.00-39.00
No. 2 Heavy Melt. Steel	*33.00-34.00*
No. 1 Bundles	36.00-38.00
No. 2 Bundles	32.00-33.00
No. 3 Bundles	27.00-29.00
Machine Shop Turnings	26.00-27.00
Short Shovel Turnings	27.00-28.00

Cast Iron Grades

No. 1 Cupola Cast	*40.00-41.00*
Charging Box Cast	36.00-37.00
Heavy Breakable Cast	35.00-36.00
Brake Shoes	*39.00-40.00*
Clean Auto Cast	40.00-42.00
Burnt Cast	35.00-36.00

Railroad Scrap

R.R. Malleable	45.00-46.00
Rails, Rerolling	*49.00-50.00*
Rails, Random Lengths	40.00-42.00
Rails, 3 ft and under	45.00-46.00
Uncut Tires	42.00-43.00
Angles, Splice Bars	45.00-46.00
Railroad Specialties	44.00-45.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Bundles	18.00
No. 2 Bundles	17.00
No. 3 Bundles	15.00
Machine Shop Turnings	9.00

Cast Iron Grades

No. 1 Cupola Cast	32.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Random Lengths	22.00

SEATTLE

No. 1 Heavy Melt. Steel	**$24.00**
No. 2 Heavy Melt. Steel	**24.00**
No. 1 Busheling	**21.50**
Nos. 1 & 2 Bundles	**22.00**
No. 3 Bundles	18.00
Machine Shop Turnings	15.00
Mixed Borings, Turnings	15.00
Punchings & Plate Scrap	30.00-32.50
Cut Structurals	30.00-32.50

Cast Iron Grades

No. 1 Cupola Cast	30.00-35.00
Heavy Breakable Cast	30.00
Stove Plate	25.00-27.50
Unstripped Motor Blocks	30.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	35.00
No. 1 Wheels	32.50

Railroad Scrap

No. 1 R.R. Heavy Melt	25.00
Railroad Malleable	30.00
Rails, Random Lengths	26.00
Angles and Splice Bars	25.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
Nos. 1 & 2 Bundles	17.50
No. 3 Bundles	14.50
Machine Shop Turnings	11.00
Mixed Borings, Turnings	8.00
Punchings & Plate Scrap	32.00

Cast Iron Grades

No. 1 Cupola Cast	38.00-39.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50
Rails, Rerolling	39.50

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	50.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.

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Statler Bldg.
Hancock 6-0062

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Lincoln-Liberty Bldg.
Rittenhouse 6-7455

READING, PA.
Luria Bldg.
Reading 3-5221

SAN FRANCISCO, CAL.
Pacific Gas & Elec. Co.
Bldg. • Douglas 2-7495

HOUSTON, TEXAS
803-4-5 Milam Bldg.
Charter 4-6095

BIRMINGHAM, ALA.
Empire Bldg.
Birmingham 54-2415

PITTSBURGH, PA.
Oliver Bldg.
Atlantic 0523

LEBANON, PA.
Luria Bldg.
Lebanon 850

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Sheets, Strip . . .

Sheet and Strip Prices, Page 129 & 130

Chicago—Galvanized sheet producers, asked by the Department of Commerce to supply 30,000 tons to grain bin producers, will do so this month at expense of other consumers. Military orders are not expected to take any substantial tonnage until late in the year, although scattered orders are being placed. One such order, booked by Inland, was for 1600 tons of cold-rolled sheets for "blitz" cans. Frantic consumer pressure shows no sign of abating. Appliance makers are particularly anxious to obtain flat-rolled steel. Cold-rolled sheets brought $270 a ton in the gray market. Some fabricators face shutdowns unless steel can be obtained.

Geneva, Utah—Establishment of an f.o.b. mill price of 3.45c on hot-rolled carbon steel sheets was announced last week by the Geneva Steel Co., subsidiary of U. S. Steel Corp. This is the first f.o.b. Geneva price ever quoted since in the past sheets produced at that point were shipped to other subsidiaries of U. S. Steel. Last week the company announced plans for additional facilities to produce 100,000 tons of hot-rolled sheets annually. The expansion will be completed next summer.

New York—Most sheet producers have blanked out October and some the first two weeks in November as well in an effort to become current with commitments. Few have taken fourth quarter action on the major grades beyond that time. Stainless sheet and strip deliveries are more extended.

Pittsburgh—Sheet consumers expect substantial fourth quarter allotment cuts due to military requirements. Such tonnage to date is small, involving airplane light fixtures, marine truck bodies, jeeps, gasoline storage tanks, rocket and radar equipment components, file cabinets, etc. Mills are adhering to 60 days lead time in scheduling these orders. Consequently, September allotments should remain intact for civilian goods accounts.

Philadelphia—Sellers of sheets have taken no action for fourth quarter on major grades, other than to blank out the first month or six weeks to take care of arrearages. They are accepting bona fide emergency work.

Extras on cold-rolled strip .069 and heavier have been increased by Stanley Works, Bridgeport. When size extras for hot rolled were revised earlier this year there was proportionately larger advance in heavier gages than on light sizes. This extra cost has been reflected in cold-rolled .069 and heavier to such disadvantage revision is necessary that heavier sizes bear proper share of increased costs.

Boston—Consumers of flat-rolled are becoming more realistic in attempting to place additional orders. Pressure for shipments against scheduled orders is heavy. Armament requirements are small, but increasing. Stainless and alloys are now backed into November, but with exception of electrical sheets, little definite scheduling is being done beyond October.

Cleveland—Sheetmakers decline to accept all the tonnage offered them, holding customers to established quotas. Where allotments have been set up for fourth quarter they are smaller than in third quarter. Heavy carryover from the summer period will absorb a substantial portion of last quarter output. Buyers are reaching far afield for tonnage, a large manufacturer of office appliances, for instance, bringing strip into this district from Chicago.

Los Angeles—Mills are eliminating less-popular sizes and revising allocations sharply downward. Producers are accepting only enough tonnage to fill immediate rolling capacity. Small lots of stainless steel sheets have arrived from Japan.

Last week Columbia Steel Co., subsidiary, U. S. Steel Corp., announced plans to increase cold-reduced sheet steel and tin plate capacity at its Pittsburg, Calif. plant. The new mill, to be in operation next summer, will increase capacity by 215,000 tons annually.

Steel Bars . . .

Bar Prices, Page 129

Boston—While some bar mill openings are held for fourth quarter priority volume, other schedules are filled to a point where revisions will be necessary should armament requirements develop beyond estimates. Cold-finished alloy rollings are now in November. Several rocket assembly contracts have been placed in this area while buying and sub-contracting for Springfield armory is mounting. High Standard Mfg. Corp., Hamden, Conn. has a sub-contract for carbine operating slides at $644,663.74.

New York—Most leading sellers of hot carbon bars have little available for the remainder of the year. Alloy bar demands have increased. Sellers are screening specifications closely to reduce substitution buying.

Philadelphia—While some hot carbon bar sellers are sold out for the entire fourth quarter, others still have capacity left, and are booking on a month to month basis. Cold drawers are booked up for the year.

Pittsburgh—It is impossible to determine extent mill allotments of carbon and alloy hot-rolled bars will be affected next quarter for shipment to civilian goods accounts. Sellers are receiving an increasing number of inquiries for war requirements, but relatively little tonnage has been placed. Mill allotments for August and September delivery will not be significantly altered.

Crucible Steel Co. of America increased prices on nickel bearing alloy bars $2 to $14 per ton effective Aug. 1.

Cleveland—Military and related inquiry for carbon and alloy bars is increasing but as yet such business is small in relation to total order volume. Expectations are shipment schedules to civilian goods manufacturers will not be materially cut into until fourth quarter. Producers are holding customers strictly to established quotas and are warning it may be necessary to revise schedules later to accommodate government demands. Quotas will be smaller for last quarter with the tonnage carryover from third quarter certain to take up at least one month's production in the opinion of some trade observers.

Chicago—Arrearages will allow only about two-months' output in fourth quarter for new business. Some mills are warning customers allocations may be cut further when military orders increase. Aircraft alloy requirements have increased, while bar consumption by truck manufacturers also is larger. Scare buying continues.

Plates . . .

Plate Prices, Page 129

Cleveland—Plate sellers, booked well into fourth quarter, are not disposed to accept new business pending clarification of the outlook as regards government requirements. Customers are on strict quotas, which, in some cases have been halved for last quarter. Prices are strong as reflected in a $6 per ton increase by Lukens Steel Co. Sellers slipping into this area as of Aug. 1 discontinued absorbing freight, now quoting straight f.o.b. mill. In some instances the savings to the sellers amount to as much as $6 per ton.

Preliminary moves are underway for building army tanks at the old Fisher bomber plant here by Cadillac Division, General Motors Corp. Hiring of an initial 6000 workers and the lining up of suppliers are getting under way. Cautious predictions are made tanks will begin rolling from the plant in about seven months. Steel supply will be obtained locally so far as possible. Since plates figure largely in steel needs expectations are some continuous strip mill capacity in this general area probably will be converted to plate production.

Boston—Plate producers charging premiums have again increased prices, $6 to $8 per ton or 3.90c and 4.25c mill; extra on $\frac{3}{8}$-inch and under is also higher, $4 per ton in at least one case. Lighter plates, with rollings behind schedules, are being limited to varying ratio per order. Plate mills have much unscheduled volume tentatively booked for fourth quarter, but until more important programs are clarified and distributed for that period, little volume beyond October is assigned rolling space. Lukens Steel Co., has also increased open hearth alloy sheets $6 a ton to 4.80c, Coatesville, Pa. Both alloy and clad plates are more active.

Philadelphia—Three district mills have advanced prices. Central Iron & Steel Co., Harrisburg, Pa., boosted prices on plain carbon plates $8 a ton to 4.25c mill, and Lukens Steel Co., Coatesville, Pa., $6 a ton to 3.90c mill, both effective Aug. 14. The latter also advanced light gage extras $4 a ton on $\frac{3}{16}$ to, but not including, $\frac{3}{8}$ inch. Worth Steel Co., Claymont, Del., advanced plain plates $6 a ton to 3.90c mill, effective Aug. 18, also steel going into flange products.

Coatesville, Pa.—Carbon steel and low alloy steel plates were increased $6 per ton last week by Lukens Steel Co. to 3.90c and 4.80c, respectively, f.o.b. Coatesville. The company also revised light gage thickness extras.

Los Angeles—District plate producers are keeping current with delivery promises by trimming customers' requests for tonnage. Small lots received by fabricators do not meet their requirements.

Chicago—Increase in plate price by

SPHEROIDIZED WIRE

by

WICKWIRE

Steel with this grain structure resists forming and is tough on wire working tools and dies.

Spheroidizing changes the free cementite in steel from elongated shapes to small nodules or spheroids thus rendering the steel soft and ductile.

Where manufacturing calls for severe wire forming—it will pay you to investigate the advantages of Wickwire Spheroidized Wire. Soft and easily workable, this specially processed wire never gives your machines a "hard time"—lends itself readily to twisting, bending and swaging.

Our engineers and metallurgists are always ready to help you in the correct selection and application of specialty steel wires for your particular needs. High or low carbon steel . . . round or shaped . . . in all sizes, tempers, grades and finishes—when you order wire, specify WICKWIRE.

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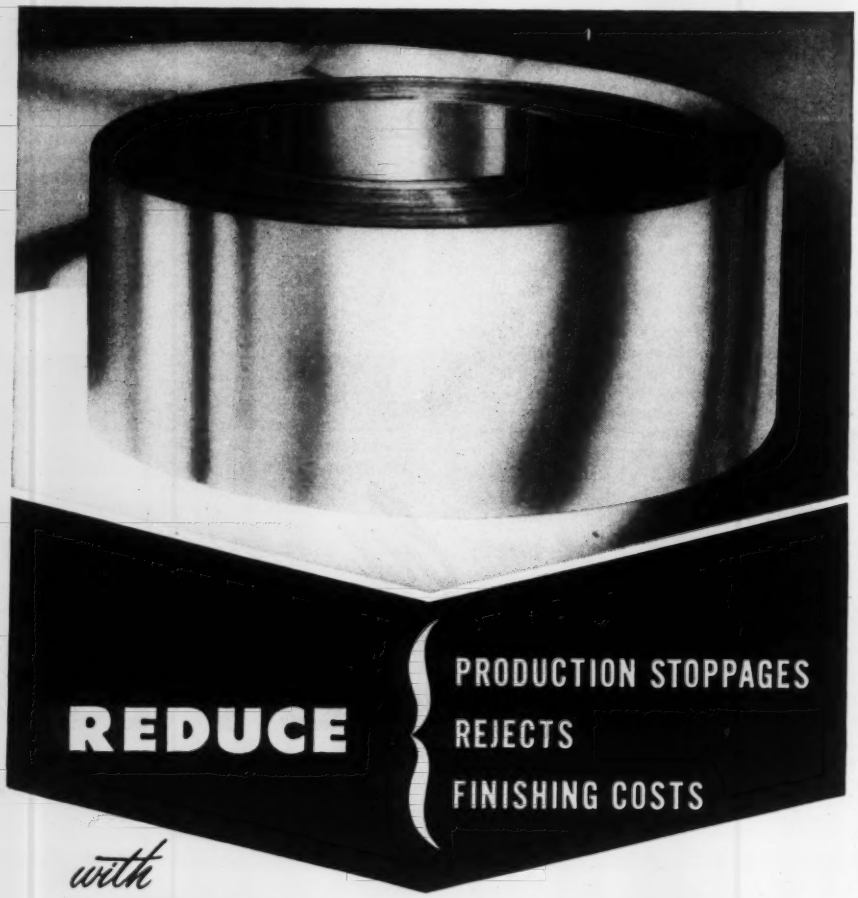

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STRIP STEEL

Wallingford steel is cold processed to meet your most exacting requirements. Precision rolling and slitting, with the latest equipment, provides you with your specified width and thickness tolerances every inch of the way. With this Wallingford custom-tailored strip you obtain uniform fabrication characteristics; eliminate costly production stoppages and high rejects; improve your profit picture.

LOOK TO WALLINGFORD STEEL FOR LEADERSHIP IN THE PRODUCTION OF:

STAINLESS STRIP — Up to 24" in all grades. Bright Annealed 18-8 — To 15" wide — From .005 gage. Mirror-like surface materially reduces finishing costs.

HIGH AND LOW CARBON STRIP AND COIL — Closer gage tolerances mean fabrication of more finished parts per hundred pounds of steel.

RESISTANCE WELDED TUBING — From strip to tube, every inch a Wallingford Quality Controlled product.

INVESTIGATE WALLINGFORD'S PRODUCTS TODAY. AN INQUIRY ON YOUR COMPANY LETTERHEAD WILL BE PROMPTLY ACKNOWLEDGED.

THE WALLINGFORD STEEL CO.

WALLINGFORD, CONNECTICUT, U.S.A.

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Lukens failed to touch off similar announcements by local producers. Extent of the surge in freight car ordering does not show in mills' plate order books, light-gages having been under strict control for some months.

Fluorspar . . .

Fluorspar Prices, Page 132

Cleveland—Domestic metallurgical grade fluorspar prices have been advanced $2 per net ton to $39 for 70 per cent grade, and $36, for less than 60 per cent.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 129

Boston — Concrete reinforcing bar distributors are selective in accepting new orders. Fabricating facilities are taxed and ability to process is more of a problem than steel supply with some. Bridges account for bulk of inquiry, but housing and miscellaneous requirements are substantial. Prices for bars in place are higher, ranging from 11.00c to 15.00c per pound.

Chicago—Best delivery some bar mills can promise customers is mid-December. Remnants of the recent highly competitive market are still seen in bids; one contractor figures his bids at 10 per cent over labor and materials costs and hopes this leeway will cover his insurance, overhead and profit. Prices have firmed.

Ft. Worth, Tex.—New price schedule has been effected by Texas Steel Co. on rail steel reinforcing bars. It now quotes to consumers 5.08c, and to fabricators 4.33c. This is an increase of $3 per ton. The company also quotes electric furnace billet ⅜-in. bars, to fabricators only, 5.03c.

San Francisco—Reinforcing bar demand continues heavy to meet current upturn in construction and to augment contractors' stockpile.

Wire . . .

Wire Prices, Page 131

Cleveland—Wire drawers are operating at top speed but are unable to catch up with demand. Order backlogs for wire products of every description are so heavy the carryover into fourth quarter will take a good portion of that period's production. The mills are receiving a flood of inquiries from jobbers and manufacturing consumers but they are screening orders carefully to prevent speculative stockpiling and to assure equitable distribution of production. Nonintegrated wiremakers complain the cut in their wire rod quotas for last quarter, in some cases as much as 50 per cent, may force some curtailment in operations.

Pittsburgh—Demand for wire products exceeds output. Jobbers' nail stocks were practically depleted by heavy July buying. Their efforts to replenish inventories have boosted mills' order backlogs to nearly 6 months.

Chicago—Civilian wire needs are unusually heavy. Consumers are trying to order many times their normal tonnage consumption, many inquiries being duplicates. Customers

was this call necessary?

Some "Moral Insurance" here might have avoided a serious accident

Workmen's compensation is a fine thing—but it can't replace a mangled arm.

Safety laws prevent many accidents—but they can't cover every hazard of an individual plant.

Accident prevention which goes *beyond the law* is an unwritten responsibility of every employer. It is his "Moral Insurance" for his employees welfare.

The premiums for "Moral Insurance" are not high. They do not have to be paid for in fancy safety gadgets. Their cost is simply the institution of common sense safety regulations covering all local hazards—enforced by employee committees with the full support of management.

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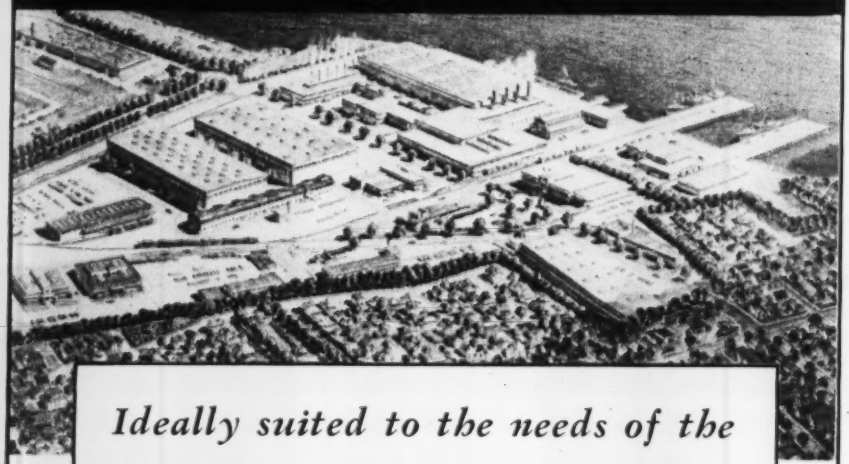

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The property, formerly the Walsh-Kaiser Shipyard, is located only two miles from downtown Providence, R. I. Modern structures of every size and type from 4,000 to 196,000 square feet on one floor are immediately available for steel fabricating — rolling mills, steel assembly, steel storage, or any other heavy industrial uses.

Single or integrated groups of buildings are immediately available on land sites from one to twenty-two acres. Now on the site are railroad spurs, water front piers and all utilities.

WRITE FOR FREE BROCHURE CONTAINING COMPLETE DESCRIPTION OF SITE AND BUILDINGS.

TYPICAL BUILDINGS

1. Floor area: 191,896 square feet. Equipped and wired for bridge cranes. 110; 220; 550 Volt 3 phase AC.

2. Floor area: 30,089 square feet. Mezzanine: 26 x 275 feet. Equipped and wired for bridge cranes. 110; 220; 550 Volt 3 phase AC.

3. Floor area: 169,453 square feet. Equipped and wired for bridge cranes. Railroad siding goes through the building. 110; 220; 550 Volt 3 phase AC.

HARBORSIDE INDUSTRIAL PARK

BARTON TRADING CORP.

1 WASHINGTON AVENUE PROVIDENCE, R. I.

cannot meet requirements on present allocations, particularly fastener producers making recessed-head screws. Rod buyers can't get enough domestic material and have signed long-term commitments abroad.

Structural Shapes . . .

Structural Shape Prices, Page 129

Boston—Quoted spreads on fabricated structural steel are wide, but overall trend is firmer, recent inquiry for steel in place for one medium-tonnage inquiry ranging from 8.50c to 14.00c per pound in place. Bridge inquiry includes more projects, but tonnage involved is smaller; Connecticut has deferred 10 of 44 projects under federal aid, including one of the six sections, East Hartford-Glastonbury expressway. Five will be completed. Steel for small bridges, Maine, about 300 tons, will be supplied by a Portland shop. One producer of plain material has increased prices $16 per ton to 4.25c mill.

Philadelphia—Fabricated steel deliveries continue to expand. Many shops are quoting from five to six months, and are accepting tonnage on a highly selective basis. The Phoenixville, Pa., producer advanced shapes to 4.25c, mill.

Chicago — Fabricators would be swamped with small jobs if they accepted all available. Major shops are booked to extent of available steel and steer clear of unattractive projects.

Los Angeles—Improvement in fabricators' order backlogs stem from heavy awards for hospitals, bridges, and small industrial buildings. Lessening demand for heavy structural sections is causing Kaiser Steel Corp. to cease production of 15-in. I-beams and 15-in. channels in favor of the more popular lighter sections—3-6 in. channels and H-beams, and 10-12 in. channels.

Iron Ore . . .

Iron Ore Prices, Page 133

Pittsburgh—Adequacy of iron ore stocks this coming winter is questioned by a growing number of steel producers. Premature closing of ore vessel movement last fall due to steel strike, plus late opening of lake navigation this year has forced U. S. Steel Corp.'s subsidiaries to commence shipping about 200 cars of ore daily all-rail from Minnesota. The railroad strike in Chicago district held up shipments of ore to some mills here. One producer is shipping all available ore to its mill in contrast to normal procedure of building up stocks at lower lake ports. It fears one of its blast furnaces may be forced out of service this winter for lack of ore.

A new sintering plant at Carnegie's Edgar Thomson Works was brought into service last week. The unit will agglomerate iron-bearing flue dust and ore fines in the recovery of 400,000 tons of high grade ore annually.

Cleveland—Deficit in lake ore shipments this season compared with a year ago is still over 11 million tons. Total movement to Aug. 14 was 39,610,329 tons against 50,954,432 in the like 1949 period. Shipments for the week ended Aug. 14 amounted to

2,812,822 tons compared with 2,647,347 for the like 1949 week. Average daily loadings at United States ports were 391,720 tons compared with 366,445 last year, reports the Lake Superior Iron Ore Association.

Birmingham—Some 4000 red ore miners and nearly 5000 coal miners of the Tennessee Coal, Iron & Railroad Co. struck last week. The ore miners seek job reclassifications which would result in pay increases ranging from 9 to 13 cents an hour. They set up picket lines about the Wenonah, Ishkoods and Muscoda ore mines and the ore conditioning plant. The coal miners closed all five of the company's mines.

Picketing of the company's steel mills was started on Thursday. All finishing mills were halted and company officials said blast and open hearth furnace operations would also be affected.

Vancouver, B. C.—Japanese steel manufacturers have closed a $1 million contract for British Columbia iron ore. The ore will be mined at the Prescott mine, Texada island, idle 20 years. Shipments are scheduled to start in 60 days.

St. Johns, N. F.—United Kingdom placed orders with Dominion Steel & Coal Co., for 200,000 tons of iron ore from the Wabana mines. Additional British orders will total 650,000 tons in 1951. In addition to orders from Britain the company has one from the U. S. for 10,000 tons and another from occupied Germany for 50,000 tons. Dominion Steel & Coal takes 600,000 tons annually for its Sydney, N. S. plant.

Pig Iron . . .

Pig Iron Prices, Page 128

Cleveland—General pickup in demand for castings is reflected in noticeable rise in jobbing foundry melting activity. Shops doing machine tool work are busy. Captive foundries have been active for months past under pressure for durable consumer goods of all kinds. So far little work directly related to the Korean war or new defense program is reported by local foundries.

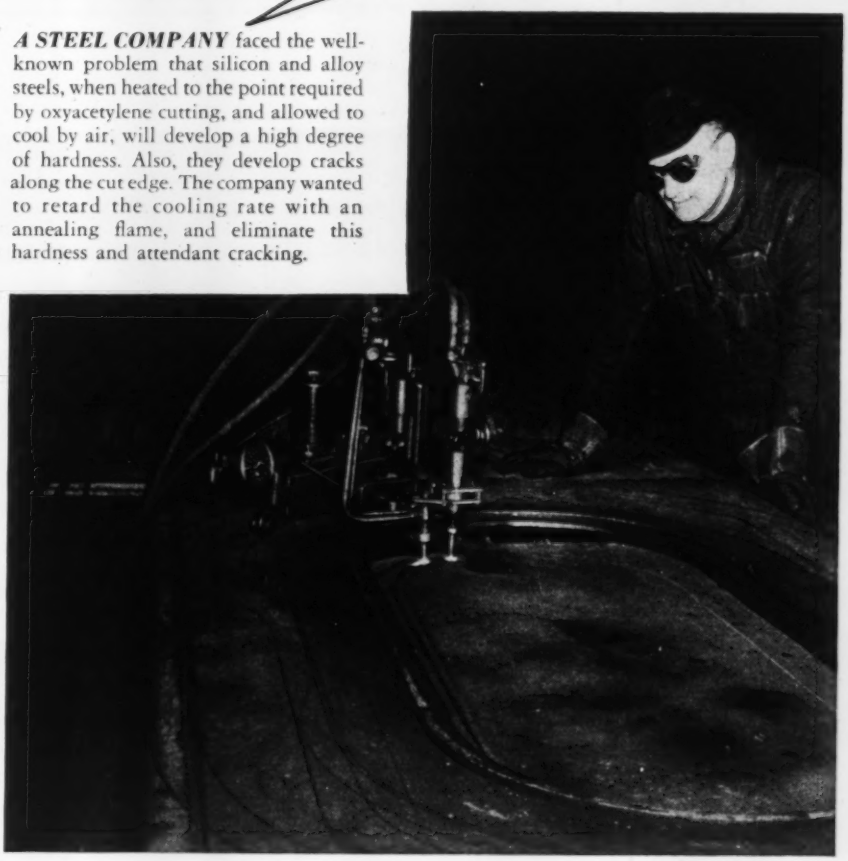
Demand for foundry pig iron is strong. There is no surplus iron and, consequently, there is little opportunity for foundries to stockpile. Some fears are expressed of possible diversion of blast furnace capacity from foundry to basic pig iron.

Reports that the Ford production foundry and motor plant being built here will be tooled up for production of army aircraft engines is denied by officials of the company. Ford, an official states, has not received a single war order as yet. The motor plant here is expected to be ready about Jan. 1 but the foundry will not be completed until early 1952.

Pittsburgh—Jobbing foundries and shops serving the railroads have experienced the largest increase in new order volume. One jobbing shop is booked 120 days ahead at practical capacity. Westinghouse Air Brake Co. is operating 55 to 60 per cent above earlier this year. Enamelware and radiation interests are scheduled full through rest of year in some instances. Order backlogs of steel mill equipment foundries have reversed

Simultaneous Flame Cutting— Softening eliminates cracks on certain steels

A STEEL COMPANY faced the well-known problem that silicon and alloy steels, when heated to the point required by oxyacetylene cutting, and allowed to cool by air, will develop a high degree of hardness. Also, they develop cracks along the cut edge. The company wanted to retard the cooling rate with an annealing flame, and eliminate this hardness and attendant cracking.



A. H. Yoch, Airco Technical Sales Service Specialist, suggested and assisted in developing equipment and technique for flame softening the steel simultaneously with the machine gas cutting operation.

He devised a special torch set-up (as illustrated) with the annealing flame following closely, in a fixed position, behind the cutting flame. This retarded the cooling, eliminated the need for manual softening, and resulted in a faster, superior annealing job. By retarding the cooling rate with an annealing flame, the hardness and attendant cracking were dispelled.

Further, the speed with which the Airco No. 4 Radiagraph operates saved many production hours—a money-saving performance fact that is constantly winning new friends for this unique gas cutting machine.

For more information about flame cutting and softening, or for Technical Sales Service on a problem involving the use of the oxyacetylene flame or electric arc, call your nearest Airco office.

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Offices in Principal Cities

TECHNICAL SALES SERVICE—ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

the downtrend noted during first half. Foundries expect iron, scrap and coke supplies to tighen over coming months. Reports integrated mills are diverting a greater portion of furnace capacity to basic production lack confirmation. Westinghouse Electric Corp. is producing nodular iron at its Trafford foundry under license from International Nickel Co.

Philadelphia—Pig iron supply is increasingly tight. Demand is heavier from steel mills and foundries and one district producer, contemplating repairs to one of its furnaces, will probably have to curtail allotments in September. Meanwhile, interest in foreign iron is increasing.

Barium Steel Corp. has taken up its option with the government for the Chester, Pa., blast furnace and plans to have it in operation within two months. It will be operated by the Central Iron & Steel Co., Harrisburg.

New York—Specifications are heavier due to increasing foundry melt and desire of consumers to enlarge inventories. Prospects are for greater supply stringency next month when the larger stack at Swedeland, Pa., may have to go down for repairs.

Dallas, Tex.—Output of the Lone Star Steel Co. has been contracted for over the remainder of the year. In a number of instances contracts extend through 1951, according to E. B. Germany, president. Prices in effect at time of shipment apply. Recently the company announced a new schedule of pig iron prices quoting basic at $41.50, No. 2 foundry, $42, and malleable, $42.

Boston—Foundry melt mounts slowly, which coupled with some rounding out of inventory, accounts for slightly higher pig iron shipments. Textile mill equipment shops are melting a trifle more iron and may go higher with attractive new business in sight.

Buffalo—Demand for merchant pig iron is absorbing output, but buying is orderly with no great rush to augment reserves. Activity in pig iron is due to a pick up in castings for civilian products.

Birmingham—Demand for pig iron is moderately heavier as outside users explore the possibility of obtaining tonnage here.

Woodward Iron Co. is operating two blast furnaces, the third being out for repairs.

Scrap . . .

Scrap Prices, Page 136

Pittsburgh—Strong upward price trend in scrap prices continues with brokers paying $46-$47 for No. 1 heavy. One independent mill paid $46 for No. 1 last week. Major mills contend they are out of the market this month for dealer scrap. Some smaller mills are buying constantly, but will not divulge their purchase prices. Considerable tonnage of customer scrap undoubtedly is moving below the $46 level. Increased foundry activity has forced advances of $1-$3 in cast grades. Pennsylvania railroad list, which closed last Monday, is expected to bring about $49 for No. 1 heavy melting and $51 to $52 for specialties.

Philadelphia—Prices on major grades of steel scrap have advanced further. While there has been some consumer buying, mills generally are moving cautiously because they do not wish to have more high-priced inventory on hand than is necessary should the government establish maximum prices at lower levels.

Boston—Higher prices for steel scrap stimulated buying by local and Pennsylvania mills. All grades of steel scrap advanced. Cast scrap prices are also stronger, mixed cast being $1.50 higher with other grades in line. Worcester and Bridgeport consumers of steel scrap bought on the rise.

New York—Brokers are still quoting $26-$27, fob shipping point, for No. 2 heavy melting, but increased buying prices for No. 1 heavy melting and No. 1 bundles to $34-$35; No. 2 bundles, to $25.50-$26. They increased prices for machine shop turnings and mixed borings and turnings to $22-$23; for short shovel turnings, $24-$25. They increased prices for punchings and plate scrap, low phos plate, five foot and under, and electric furnace bundles to $35-$36. Cast grades are unchanged.

Buffalo—Scrap climbed $2.50 to $4 a ton last week, higher prices for steelmaking grades being supported by small orders. Mills show no interest in making large commitments. A sale of No. 1 machinery cast at $41-$42 was reported.

Detroit—An outside electric fur-

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nace plant bought busheling, No. 1 steel, bundles and plate here, causing a flurry of excitement among dealers who figured another price spiral was in the making. However, the market is quiet otherwise and prices are unchanged. Next automotive lists may be allocated by as much as 90 per cent, although brokers are undecided whether such material will be priced at an agreed figure or at the quoted market. Local melters are comfortably fixed on scrap inventories and are making no substantial buys. Several smaller foundries face closing because of coke shortage resulting from strike at plants of a principal supplier.

Cleveland—Scrap prices advanced here last week to the basis of $43-$43.50 for No. 1 heavy. Material is coming out of industrial plants in improved volume as vacation shutdowns end. Shipments are moving to consuming plants at a satisfactory rate, indicating there is no large scale speculative stocking on part of dealers or brokers. Strength in the market here reflects in part purchases by two major mills in the Valley at $46.

Chicago—Mill buying, when it occurs, likely will be at levels $3 to $4 higher than the last purchase. One mill had no success last week trying to obtain heavy melting scrap at $40 for No. 1 and $38 for No. 2. Traders contend there is not enough scrap available to cover mills' needs. This is in contrast with previous periods when the market was buoyed by speculation and suddenly had the bottom pulled out by prolonged mill abstinence. Railroad items were in a runaway condition, pricewise. Several items on lists which closed last week were $6-$7 higher than other roads had received the previous week.

Cincinnati — Key factors in the scrap market are trying to use brakes on the price surge. Markup is modest so far. District melters are well supplied. Material is coming out freely.

St. Louis—Scrap market undertone is strong. Foundry demand for cast grades is heavier stimulating prices. No. 1 cupola is $1 higher; brake shoes, $2.

Los Angeles — Scrap market is strong and little steelmaking scrap is moving. Prices are firm. Buying of foundry material is limited.

Fasteners . . .

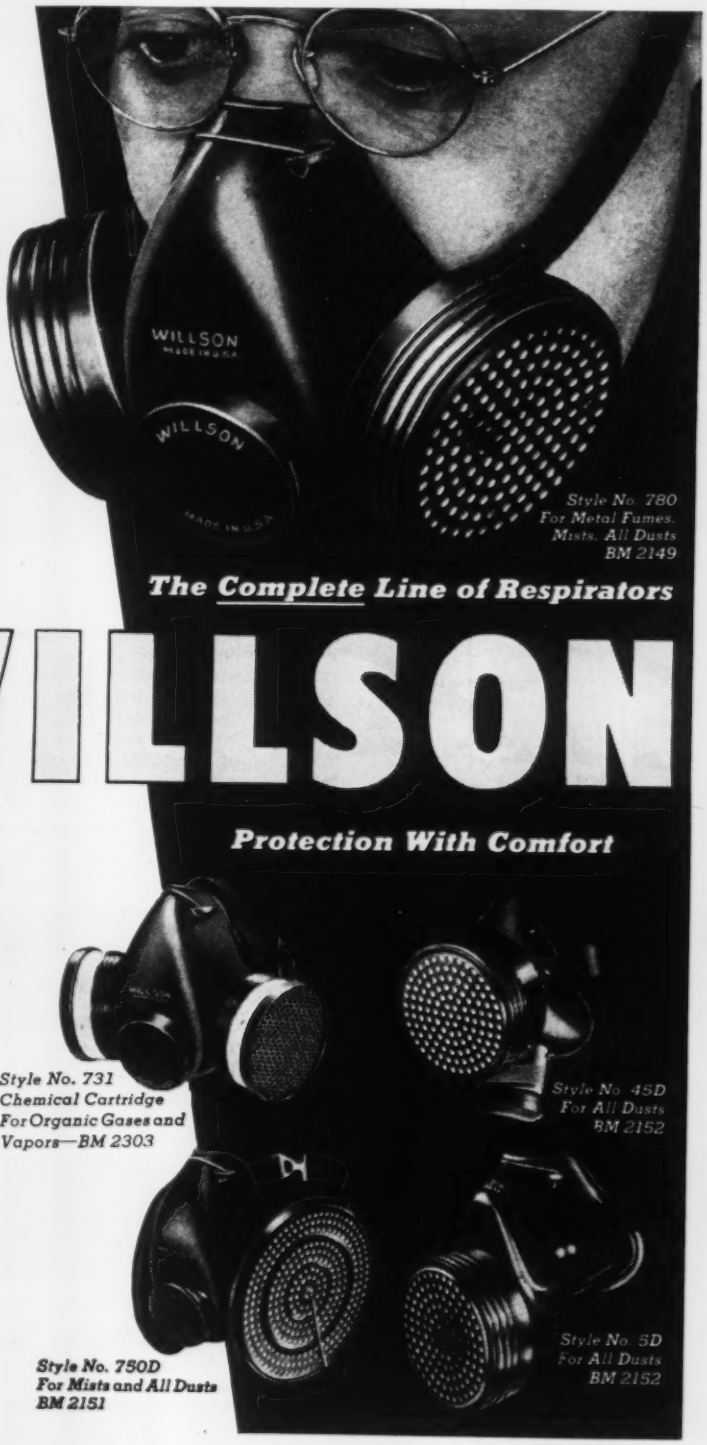
Bolt, Nut, Rivet Prices, Page 132

Pittsburgh — Increased order volume is reported. Effort of consumers to augment inventories shows no signs of easing. Producers have enough steel on hand and promised to sustain the current 5 days per week operating schedule through third quarter. Stocks of most items are lowest in months. Order backlogs extend 4 to 8 weeks.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 132

Pittsburgh—Increased pressure for shipments of oven foundry coke is noted. Substantial improvement in foundry order backlogs during period when one outside coke supply source was idled by a strike prompted many foundries to attempt to augment inventories. Carnegie-Illinois pushed



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the first coke from a new battery of 61 ovens at Clairton Works. Capacity is 300,000 tons annually.

Philadelphia—Strikes by union district 50 members at certain midwestern coke plants have diverted considerable coke inquiry to the east. Eastern producers have little to spare.

Warehouse . . .

Warehouse Prices, Page 133

New York—Prices have increased on several steel products out of warehouse on which spreads for country delivery are 30.00c per 100 pounds compared with 20.00c formerly; maximum advance is $2 ton which actually lowers price to country buyers on some products. Effected are hot rolled sheets, 18 gage and heavier; hot-rolled strip, hot-rolled rounds, shapes, plates and floor plates.

Philadelphia — District warehouses stand to make a new monthly record for the year provided stocks hold up sufficiently.

Cleveland—Seeking to supplement mill shipments steel buyers are flooding warehouses with inquiries. Warehouse stocks would be quickly depleted were the distributors to accept all the business offered. However, they are screening inquiries carefully, with the result only about 10 per cent of the total is accepted.

Los Angeles—Reduced mill receipts are causing warehouse order volume to taper from all time peaks reached in July.

Winter-Wolf Co., Inc., Los Angeles, opened the first warehouse in Los Angeles to stock imported European steel exclusively.

Rails, Cars . . .

Track Material Prices, Page 131

Pittsburgh — Freight car shortage is growing. Increasing number of shipment holdups is reported. Gondolas are in especially short supply. It is doubtful if freight car builders will be able to attain the scheduled 10,000 cars-per-month output pace in January.

Chicago — Several railroads are seeking 1951 rail commitments. This contrasts with a few months ago when rail mills expected to run out of orders in fourth quarter. Some roads plan purchases far in excess of 1950 tonnage.

Canada . . .

Toronto—Steel production in Canada rose to an all-time high in the first six months this year, totaling 1,689,024 tons against 1,676,041 tons in the like 1949 period.

PLATES . . .

PLATES PENDING

100 tons or more, 500,000-gal elevated water tank, Burlington, Iowa; bids Aug. 24.

Unstated, 2100 feet 8 gage 20 inch and 390 feet 30 inch dredge pipe; bids in to Port of Grays Harbor, Aberdeen, Wash., Aug. 7.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3700 tons, plant construction, Union Carbide & Carbon Co., Marietta, O., to Lackawanna Steel Construction Corp., Buffalo.

3500 tons, plant, Celanese Corp., Rock Hill, S. C., to Bethlehem Steel Co.

9300 tons, No. 44, New Jersey turnpike, to Bethlehem Steel Co.

2855 tons, No. 50, New Jersey turnpike, to American Bridge Co., Pittsburgh.

1600 tons, state hospital buildings, Mt. Wilson, Md., to Bethlehem Steel Co.; Cramer-Vollmerhausen Co., Washington, general contractor.

1300 tons, Frankel apartment, Philadelphia, to Lehigh Structural Steel Co., Allentown, Pa.

1000 tons, Du Pont plant, Martinsville, W. Va., to Ingalls Iron Works, Birmingham.

1000 tons, plant addition, Electric Storage Battery Co., Philadelphia, to Bethlehem Steel Co.

1050 tons, No. 41, New Jersey turnpike, to American Bridge Co., Pittsburgh.

900 tons, generating station, Corning, N. Y., to American Bridge Co., Pittsburgh.

800 tons, Elmwood shopping center, East Paterson, N. J., to American Bridge Co., Pittsburgh.

800 tons, including reinforcing, addition to Ridpath Hotel, Spokane, Wash., to Union Iron Works, Spokane.

545 tons, project, Glendale, L. I., to Bethlehem Steel Co.

525 tons, library, Northeastern University, Boston, to American Bridge Co., Pittsburgh; Sawyer Construction Co., Boston, general contractor.

525 tons, apartment house, Yellowstone boulevard, 63rd drive and 64th street, Forest Hills, N. Y., to Grand Iron Works Inc., that city.

500 tons, warehouse, Paper Manufacturers Co., Bustleton, Pa., to Bethlehem Steel Co.

425 tons, plant, American Cyanamid Co., Pearl River, N. Y., to American Bridge Co., Pittsburgh.

350 tons, newspaper building, Wilkes Barre, Pa., to Bethlehem Steel Co.

335 tons, manufacturing building, Consolidated Lithographing Co., Mineola, L. I., to Bethlehem Fabricators Inc., Bethlehem, Pa.

250 tons, boiler house, Villanova College, Villanova, Pa., to Bethlehem Steel Co.

240 tons, high school building, Putnam, Conn., to Tower Iron Works, Providence, R. I.; A. F. Peaslee Inc., Hartford, Conn., general contractor.

230 tons, building, Sharpe & Doane, West Point, Pa., to Bethlehem Steel Co.

210 tons, East New York bus terminal, Brooklyn, N. Y., to Dayton Iron Works, Dayton, O.

200 tons, Astoria Hospital addition, Queens, N. Y., to Elizabeth Iron Works, Elizabeth, N. J.

150 tons, alterations to Sick's Spokane Brewery Inc., to Union Iron Works, Spokane, Wash.

100 tons plus, J. J. Newberry store, Spokane, Wash., to Union Iron Works, Spokane.

100 tons, mill building, Savannah, Ga., to American Bridge Co., Pittsburgh; Morton C. Tuttle Co., Boston, general contractor.

STRUCTURAL STEEL PENDING

2500 tons, stadium, Milwaukee; bids Sept. 7 to Milwaukee County Park Commission.

1025 tons, No. 49, New Jersey turnpike overpasses, Hudson county; bids Sept. 7.

700 tons, work, Market Street subway, between 42nd and 46th streets, Philadelphia; bid Aug. 30.

200 tons, freight terminal addition, Pennsylvania railroad, Cincinnati; bids Aug. 28.

135 tons, two state bridges, (70) Pembroke, Me., and (65) Rockport, Me.; bids Aug. 23, Augusta, Me.

100 tons or more, KHQ radio station, Spokane, Wash.; bids soon.

Unstated, addition to Spokane & Eastern branch of Seattle First National Bank, Spokane, Wash.; general contract to Max Kuney, Spokane.

Unstated, three span bridge, North Santiam river, Oregon, unit of Detroit dam; bids soon to U. S. Engineer, Portland, Oreg.

Unstated, 602 foot Oregon state Jackson highway project, also seven state Pacific Highway spans; bids to State Highway Commission, Portland, Oreg., Aug. 21 and 22.

Unstated, 28,000 rail anchors for 115-lb rails, Alaska Railroad; bids to Federal Supply Service, Seattle, Aug. 29.

REINFORCING BARS . . .

REINFORCING BARS PLACED

850 tons, Indiana-Michigan Electric Co., Lawrenceburg, Ind., to Joseph T. Ryerson & Son Inc., Chicago.

637 tons, Pennsylvania turnpike sec. 31-B, Allegheny county, Pa., to United States Steel Supply Co., Chicago.

500 tons, Faulkner House addition, Mary Hitchcock Memorial Hospital, Hanover, N. H., to Bethlehem Steel Co.; George A. Fuller Co., Boston, general contractor.

353 tons, memorial library, University of Wisconsin, Madison, to Joseph T. Ryerson & Son Inc., Chicago.

350 tons, Pennsylvania turnpike, sec 31-A, Allegheny county, Pa., to Electric Welding Co., Pittsburgh.

345 tons, paving LR 765, Allegheny county, Pa., to Electric Welding Co., Pittsburgh.

320 tons, transonic wind tunnel, shop and laboratory, Langley Field, Va., to Virginia Bridge Co., Roanoke, Va.

300 tons, state hospital buildings, Mt. Wilson, Md., to Bethlehem Steel Co.; Cramer-Vollmerhausen Co., Washington, general contractor.

293 tons, Calumet sewer 13A, South Holland, Ind., to Joseph T. Ryerson & Son Inc., Chicago; Michael Pontarelli Inc., contractor.

240 tons, St. Luke's Hospital, Milwaukee, to United States Steel Supply Co., Chicago.

227 tons, building, H. C. Christians Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago; Freevol-Smedberg & Co., general contractor.

220 tons, warehouse and office building, American Brass Co., Chicago, to Ceco Steel Products Corp., Chicago; Ragnar Benson Inc., general contractor.

214 tons, paving LR 765(5), LR 766(1), TR 22-30, Allegheny county, Pa., to Bethlehem Steel Co.

200 tons, REA power plant, Voltaire, N. D., to United States Steel Supply Co., Chicago.

140 tons, high school, S. Elgin, Ill., to Ceco Steel Products Corp., Chicago.

125 tons, building, Minneapolis-Honeywell Regulator Co., Minneapolis, to Paper-Calmenson Co., St. Paul.

112 tons, reservoir, E. Grand Forks, Minn., to Paper-Calmenson Co., St. Paul.

100 tons, Illinois Bell Telephone Co., Moline, Ill., to Joseph T. Ryerson & Son Inc., Chicago.

100 tons, addition, Lawrence Memorial Hospital, Medford, Mass., to Northern Steel Inc., Boston; Volpe Construction Co., Malden, Mass., general contractor; Builders Iron Works, Somerville, Mass., will fabricate structural steel.

REINFORCING BARS PENDING

335 tons, Greyhound bus terminal, Chicago; bids asked.

305 tons, nine state highway bridges, Danvers-Middleton-Topsfield and Boxford, Mass.; bids Aug. 22, Boston.

190 tons, building, Society for the Aid of Lutherans, Appleton, Wis.; bids asked.

175 tons, three span WF-beam bridge, Brandon-Sudbury, Vt.; bids Sept. 1, Montpelier.

153 tons, dam and reservoir, West Moreland county, Pa.; bids asked.

100 tons, 15-mile section West canal, Columbia Basin project; bids to Bureau of Reclamation, Denver, to be invited about Aug. 31.

Unstated, 145-foot Wynooche river and 175-foot Canyon river bridge, general contract to Port Construction Co., Port Angeles, Wash., by Simpson Logging Co., Shelton, Wash.; $30,353 and $38,552 respectively.

Unstated, science building, Notre Dame Uni-

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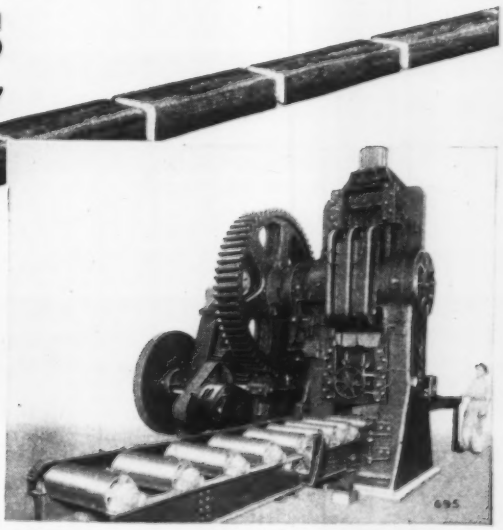

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See Page 3

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versity, South Bend, Ind.; bids asked.

Unstated, plant, Caterpillar Tractor Co., Joliet, Ill.; bids asked.

Unstated, plant, National Biscuit Co., Chicago; bids Aug. 22.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chicago, Milwaukee, St. Paul & Pacific, fifteen 1200-hp diesel-electric switch engines, five each to Fairbanks, Morse & Co., Chicago; Baldwin Locomotive Works, Eddystone, Pa.; and American Locomotive-General Electric Companies, Schenectady, N. Y. Previously reported placed with General Electric.

Louisville & Nashville, 41 diesel-electric locomotive units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Ann Arbor, 100 fifty-ton box cars, to American Car & Foundry Co., New York.

Atlantic Coast Line, 400 seventy-ton phosphate cars, to American Car & Foundry Co., New York.

Baltimore & Ohio, 200 fifty-ton box cars, to American Car & Foundry Co., New York; 300 underframes to Greenville Steel Car Co., Greenville, Pa.

Boston & Maine, 750 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago.

Illinois Central, 1000 fifty-ton box cars, to own shops at Centralia, Ill.

New Jersey, Indiana & Illinois, 100 fifty-ton box cars, to American Car & Foundry Co., New York.

Norfolk & Western, 1000 seventy-ton hopper cars, to own shops. This is in addition to 1000 placed recently.

Wabash, 500 box cars, to own shops.

RAILROAD CARS PENDING

Central Illinois, 100 seventy-ton covered hopper cars; bids to be asked soon.

Great Northern, 250 gondolas; purchase authorized.

Norfolk & Western, 500 fifty-ton box cars; bids asked.

Southern, 2050 fifty-ton steel box cars; bids asked.

Western Maryland, 700 freight cars; pending. List comprises 400 seventy-ton gondolas of one type and 10 seventy-ton gondolas of another, 150 fifty-ton box, 100 seventy-ton covered hoppers, and 40 seventy-ton flat cars.

FERROALLOYS

(*Continued from Page* 133)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained, F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C

3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Trungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min. C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca. 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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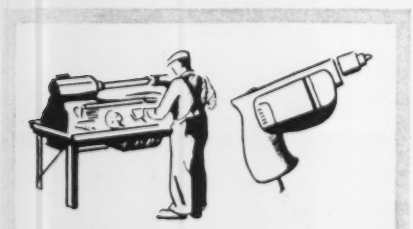

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE
ORGANIZATIONAL CHANGES

California

Pacific Electric Mfg. Corp., San Francisco, will start construction Sept. 1 on a $500,000 plant in Santa Clara county, California. The factory will have 57,000 square feet of floor space. Bechtel Corp., San Francisco, is the prime contractor.

California

Moore Business Forms Inc., Niagara Falls, N. Y., will build a new plant and Pacific Division office headquarters building in Emeryville, Calif.

California

Coleman-Pettersen Corp., Cleveland, moved its Los Angeles facilities to Vernon, Calif. The new, enlarged plant will specialize in wire and metal fabrication of advertising displays, bakery handling equipment, and aircraft and marine hardware.

Delaware

E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., is constructing a $100,000 addition to its plant in that city. The addition will be used for a mechanical laboratory and offices.

Delaware

P. M. Cleveland Inc.—machinery—was chartered by the secretary of state's office, Dover, Del. Corporation Service Co., Wilmington, Del., is serving as the principal office.

Idaho

The three low bidders on construction of the main building in which the naval reactor will be assembled and tested at the **Atomic Energy Commission's** Reactor Testing Station near Idaho Falls, Idaho, are: S. H. McGraw & Co., Hartford, Conn., $1,247,000; Ragnar Benson Inc., Chicago, $1,308,000; and M. J. Brock & Sons Inc., Los Angeles, $1,311,800. Plans and specifications were prepared by the Rust Engineering Co., Pittsburgh. Design of two remaining principal buildings will be completed by Rust in September.

Illinois

Wilbur B. Driver Co.—producer of special alloys and resistance wires—will open a new office and warehouse at 5666-70 Northwest Highway, Chicago 30, on Aug. 28. N. P. Norlie is western manager.

Indiana

Allison-Bedford Foundry, Bedford, Ind., of the Allison Division, General Motors Corp., is now operating as a separate division of the corporation. It is now known as the **Bedford Foundry Division.** C. M. Jessup, who has been in charge of the Bedford plant since October, 1945, is now general manager of the new division.

Indiana

John Meck Industries Inc., Plymouth, Ind., is doing pre-production and is making pre-assemblies in a new building in that city. In addition to the enlarged Plymouth plants, Meck is operating branch factories at Argos and Peru, Ind.

Kentucky

Aluminum Foil Sales Division, **Reynolds Metals Co.**, Louisville, Ky., is being moved to that city from Richmond, Va. This is part of the reorganization of the General Sales Division. Sales executives of the aluminum foil group are headed by Clarence Manning, vice president and member of the board of directors. J. C. Bjorkholm, who is in charge of foil advertising, also is moving to Louisville.

Kentucky

Gunnison Homes Inc., New Albany, Ind., subsidiary of United States Steel Corp., will build 500 prefabricated homes for erection in suburban Louisville, Ky. Principals in negotiations for erection of the homes are Herman Earhart and Clifford Knopf, associates in Town & Country Homes Inc., Gunnison dealers, and the Mutual Development Co., headed by L. H. Callaway, both Louisville organizations. The program is to be completed within three years and represents an eventual investment of $3.5 million. The prefabricated housing company is producing at the rate of 185 dwellings weekly.

Louisiana

Jim McCabe Co., New Orleans representative for **Automatic Transportation Co.**, Chicago,—electric industrial trucks—acquired new quarters at 301 Industries Bldg., New Orleans.

Maryland

Rheem Mfg. Co., New Sparrows Point Road, Sparrows Point, Md., manufacturer of storage tanks, water heaters, range boilers, and so forth, has leased 22,000 square feet of space in a warehouse building at Maryland and Dundalk avenues, Turner's Station, Baltimore county. The company has under way at present a large expansion program involving 134,000 square feet of new space.

Maryland

Eastern Ductile Iron Corp., Baltimore, recently organized, is equipping 10,000 square feet of space at Haven street and Danville avenue, that city. The company plans to manufacture ductile iron and "Ni-Resist" and is headed by John W. McNair, vice president of the former Standard Gas Equipment Corp.

Maryland

Mutual Chemical Co. of America, 1348 Block St., Baltimore, chrome refining, expects to begin production in its new addition around the latter part of September. The addition is a 1-story structure, 220 by 450 feet.

Massachusetts

Dravo Corp., Pittsburgh, opened a sales office at 79 Milk St., Boston. This office will handle the sale of heaters for industrial and commercial warm air heating and crane cab conditioners for cooling, filtering, heating and fume removal in industrial crane cabs.

Minnesota

Toro Mfg. Corp., Minneapolis, purchased the Coldwell - Philadelphia Lawn Mower Co. Inc., Newburgh, N. Y., brand name and substantial assets, but not the plant. Manufacturing operations on the Coldwell-Philadelphia line will be transferred to Milwaukee where another Toro subsidiary, Whirlwind Inc., now operates.

Montana

Victor Chemical Works, Chicago, is contemplating construction of a

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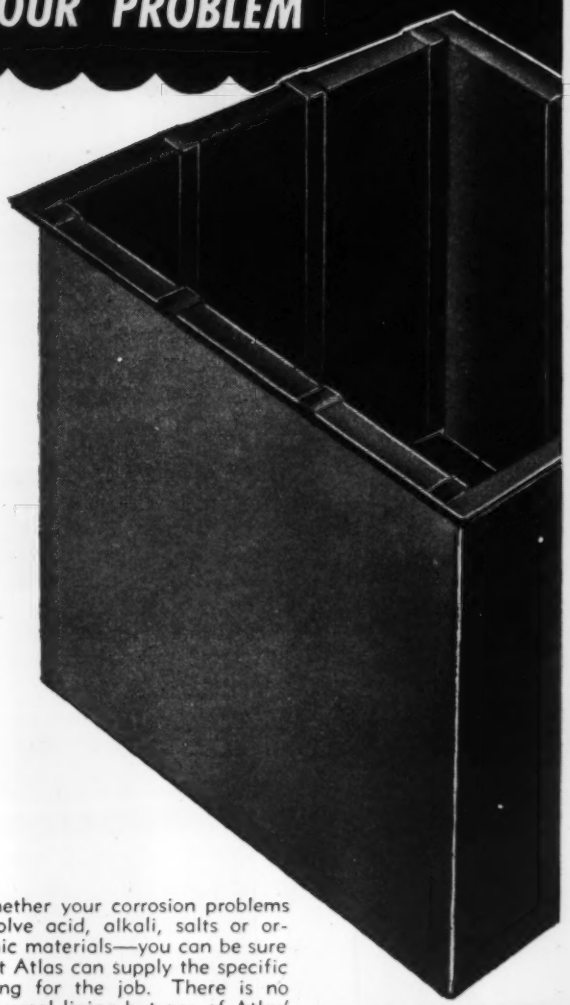

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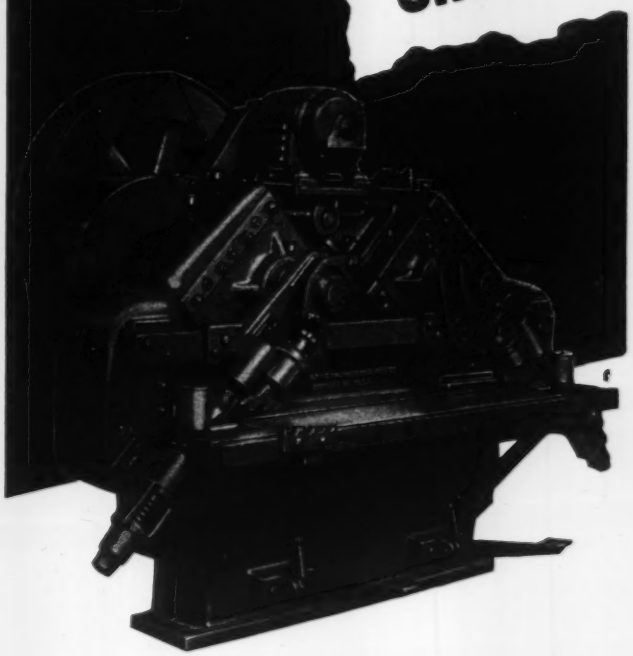

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